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Growth-Enhancing Mechanism in Transition Countries: Cooperative Effect of Foreign Direct Investment and Financial Development

M.A. Dissertation

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Abstract

Current research examines the interdependence between foreign direct investment (FDI), financial development and economic growth. The relationship between the variables in question is studied with reference to transition economies (28 former centrally planned economies). The period of observation covers the transition from centrally planned to market economies 1989-2007. The relationship is analysed using panel data regression models, factor analysis and cointegration tests. The paper suggests that FDI and financial development exert a complementary effect on economic growth, although the latter appears to be insignificant. At the same time, the research provides evidence that FDI is likely to compensate the underdevelopment of financial sector.

Keywords

FDI, financial development, economic growth, transition countries

Statement:

1. This statement is to confirm that this paper is a product of my own work and also to confirm that I used the listed sources in producing it.

2. I agree that the paper can be checked for research and studying purposes.

Prague, 21 May 2009 Natalia Shilyaeva

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Figures and Tables

List of Abbreviations

3SLS Three-Stage Least Squares

CEE Central and Eastern Europe

CIS Commonwealth of Independent States

EBRD European Bank for Reconstruction and Development

EU European Union

FDI Foreign Direct Investment

FOREX Foreign Exchange Market

GDP Gross Domestic Product

GMM Generalised Method of Moments

GNI Gross National Income

LSDV Least Squares Dummy Variables

OLS Ordinary Least Squares

WDI World Development Indicators

WGI World Governance Indicators

Introduction

The research on the economic growth is one of the major questions in economics. In recent years the research has focused on developing and transition economies trying to explain factors influencing economic growth and to suggest policy implications. While different studies highlight different factors and follow different theories, this paper focuses on the relationship between foreign direct investment (FDI), financial development (often referred to in economic literature as Finance) and economic growth.

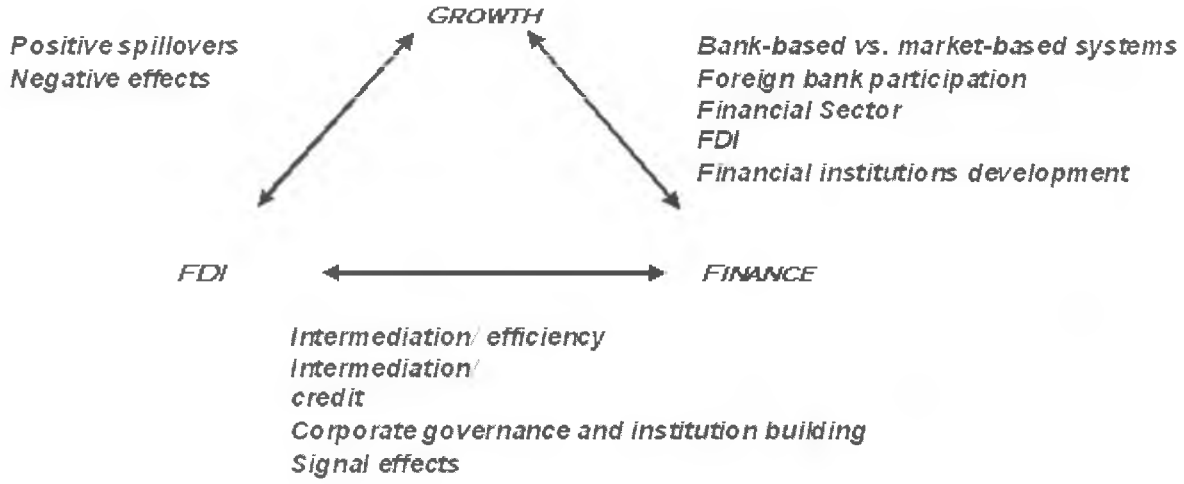
The topic is motivated by several reasons. Firstly, the process of transition from central planning to a market economy and the trade liberalisation in the former Communist economies along with opening to foreign trade and removal of barriers to FDI attracted large FDI inflows in this area in the last few years has become one of key factors of economic development in these countries. Besides, after the collapse of the Soviet Union and the whole Communist regime of the command economy, the attitude towards market economies and their mechanisms, including banking systems, has been reconsidered, and the importance of well-functioning financial system as a source of growth has been recognised. Finally, the transition period represents a unique societal experiment and it is a challenge to demonstrate the existence of the interdependence between FDI, financial development and economic growth in the transition countries, although it may be assumed that they do not follow the same pattern and different results may be expected.

The contribution of the current research to previous studies on FDI, financial development and economic growth is treating all three variables simultaneously and providing empirical results of the interrelationship between them.

While the paper concentrates on modelling the relationship between all three concepts, it is interesting and convenient to describe the relationship between all three variables in question separately (following the pattern they are studied in the literature): FDI – Growth,

FDI – Finance and Finance – growth. Following existing research and in order to summarise the relationship between FDI, financial development and economic growth, the following illustration can be used (figure 1). The figure demonstrates the interdependence between the three variables under investigation indicating of how they may influence each other. At the same time, the figure summarises the focus of research in the field highlighting the main links between these concepts.

Figure 1 FDI, Finance and Growth



Several studies conducted with respect to transition economies claim that FDI propels economic growth in the region for several reasons. Firstly, by means of FDI the region is provided with capital resources without creating any debt[1]. Secondly, FDI is regarded as a more efficient way than financial markets to foster industrial growth and technological improvement by stimulating knowledge spillovers and technology transfer[2]. Finally, FDI supplies the host economy with the access to global markets by integrating them in

[1] Boudier-Bensebaa, F. (2004) ' FDI-assisted development in the light of the investment development path paradigm: Evidence from Central and Eastern European countries', University of Paris XII, Working Paper http://www.cerdi.org/Colloque/AFSE2005/papier/Boudier.pdf

[2] Markusen, J. R.and Venables, A. J. (1999) 'Foreign direct investment as a catalyst for industrial development', *European Economic Review*, Vol. 43, pp. 335-35

multinational companies' (MNC) networks[3]. MNCs are also crucial for encouraging the restructuring of local companies and ameliorating the investment climate in the region.

It is believed that FDI can influence the host economy in two ways: directly, if foreign-owned companies are more productive and transfer technologies and firm-specific knowledge to local suppliers; or indirectly, through upgrading knowledge and skills of the personnel, that can be employed by local firms afterwards[4].

On the contrary, some opposite views concerning FDI exist. The controversy lies in the field of divestment, the area not well researched since most researchers are concerned with positive effects of FDI. In fact, a number of factors can counteract positive impact of FDI. For instance, insufficiently developed financial and legal institutions may reduce the positive effects of FDI. That is to be emphasised that the beneficial effects of FDI on growth result from higher efficiency of domestic policies rather than from other factors, such as higher capital accumulation[5]. In the model described later in the paper there is a tentative to capture legal and financial institutions variables. The positive effect of FDI as a source of knowledge spillovers is also controversial as several studies suggest that they may not occur in all industrial sectors[6]. FDI initially goes to the sectors already technologically advanced or with a large potential for development, while other sectors may remain backward. In general, major critique of FDI is based on three aspects: FDI may substitute local investment, provide a source of inequality for economic development (is usually concentrated on some industries), are very dependent on economic performance of a host country (in case of economic instability, divestment is likely).

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[3] Kaminski, B. (2006) 'Foreign Direct Investment and Central Europe's Reintegration into Global Economy', Paper prepared for the conference The New Global Division of Labour: Winners and Losers from Offshore Outsourcing Schedule held at Centre for Global Initiatives, Mount Holyoke College, Mass.

[4] Barrell, R., Pain, N. (1997) 'Foreign Direct Investment, Technological Change, and Economic Growth Within Europe', *The Economic Journal*, Vol. 107, pp. 1770-1786

[5] Borensztein, E., De Grigorio, J., Lee, J.-W. (1998) 'How Does Foreign Direct Investment Affect Economic Growth?', *Journal of International Economics*, Vol. 45, pp. 115–135

[6] Herrmann, H., Lipsey, R.E. (2003) *Foreign Direct investment in the Real and Financial Sector of Industrial Countries*, Frankfurt am Main, Germany, New York, Springer

The second relationship in the centre of attention of this research is the influence of the level of financial development on economic growth.

There are generally two extreme views regarding the relationship between financial development and economic growth. The development economics does not study this issue. For instance, Stern[7] in his review of research on development does not address the role of financial development and financial intermediaries in promoting growth. However, the importance of financial systems was first emphasised by Joseph Schumpeter[8] who argued that financial intermediation is crucial for innovation and, hence, economic growth. More evidence of the importance of financial development is provided by empirical studies. The topic has attracted researchers recently, especially after the works by Levine[9] and King and Levine[10]. The main contributions have been made in the area of comparison financial systems (market-based vs. bank-based as in Demirguc-Kunt and Maksimovic[11], and Allen and Gale[12]) and the channels through which financial development can influence economic growth. For instance, several studies suggest that bank-based financial systems are more efficient in promoting economic growth than market-based systems due to their ability to mitigate agency conflicts (Arestis, Demetriades, Luintel[13], Driffill[14]). Besides, Arestis, Demetriades and Luintel argue that if one considers stock markets and banks substitute sources, stock market development is likely to hamper the economic growth if it occurs at the expense of banking institutions development. The main arguments behind the positive relationship between the

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[7] Stern, N. (1989) 'The Economics of Development: A Survey', *The Economic Journal*, Vol. 99, pp. 597-685
[8] Schumpeter, J.A. (1911) *The Theory of Economic Development*, Cambridge, MA: Harvard University Press
[9] Levine, R. (1996) 'Financial Development and Economic Growth: Views and Agenda', Policy Research Working Paper No. 1678
[10] King, R. G., Levine, R. (1993a) 'Finance and Growth: Schumpeter Might be Right', Quarterly Journal of Economics, Vol. 108, No. 3, pp. 717-737
King, R. G., Levine, R. (1993b) 'Finance, Entrepreneurship and Growth: Schumpeter Might be Right', Journal of Monetary Economics, Vol. 32, pp. 513-542
[11] Demirguc-Kunt, A., Maksimovic, V. (2001) 'Funding Growth in Bank-based and Market-based Financial Systems: Evidence from Firm-level Data', *Journal of Financial Economics*, V. 65, pp. 337-363
[12] Allen, F., Gale, D. (2000) *Comparing financial systems*, Cambridge, Mass., London, MIT Press
[13] Arestis, P., Demetriades, P., Luintel, K. (2001) 'Financial Development and Economic Growth: The Role of Stock Markets', *Journal of Money, Credit and Banking*, Vol. 33, pp. 16-41
[14] Driffill, J. (2003) 'Growth and Finance', *The Manchester School*, Vol 71, pp. 363-380

level of financial development and economic growth are the functions of financial systems. As financial systems tend to facilitate trading by mitigating agency conflicts and information asymmetries, help to allocate resources, mobilise savings and monitor managers, they improve performance of economic agents and promote economic growth[15].

It is also important to emphasise a non-linear nature of relationship between financial development and economic growth. Yet, the initial level of economic development can be decisive for this relationship. For instance, Deidd and Fattouh[16] find that the relationship between financial development and economic growth remains positive only for countries with high level of income per capita.

The interaction between financial development and FDI does not have the same coverage in the literature as the previous two topics. The research is mainly concentrated on four channels, namely the efficiency channel; the credit volume channel; corporate governance and institution building; and signal effects for total FDI[17]. Focusing on FDI in the financial sector, researchers provide evidence on positive linkages between financial sector FDI and economic growth.

What is important to mention is the reverse relationship between economic growth, FDI and financial development. Several studies suggest that (Campos, Kinoshita[18]) economic growth and well functioning institutions may be determinants for FDI inflows.

The challenge for further research is to investigate, how financial development can provide signal effects for FDI and to estimate the joint effect of FDI and financial development on economic growth. All these questions have motivated current research for this paper, which seeks to understand the interdependence between FDI, financial

[15] Levine, R. (1996), p. 6

[16] Deidda, L., Fattouh, B. (2002) 'Non-Linearity between Finance and Growth', *Economic Letters*, Vol. 74, pp. 339-345

[17] Eller, M., Haiss, P., Steiner, K. (2005) 'Foreign Direct Investment in the Financial Sector and Economic Growth in Central and Eastern Europe: The Crucial Role of the Efficiency Channel', *Emerging Markets Review*, Vol. 7, pp. 300-319

[18] Campos, N., Kinoshita, Y. (2003) 'Why Does FDI Go Whre It Goes: New Evidence from the Transition Economies', IMF Working Paper WP/03/228

development and economic growth and to estimate whether FDI and financial development represent complementary sources of financing economic growth.

In other words, the research concentrates on three dimensions of providing the economy with financial resources: FDI, banking institutions and stock markets. Thus, it is discussed whether financial development and FDI represent complementary sources of growth. At the same time, it may be examined what will happen in case financial systems are relatively underdeveloped. In this instance, FDI may appear to be a more important source of financing and compensate the underdeveloped financial sector.

The paper proceeds as follows. First, an overview of existing theoretical and empirical research is provided in the literature review section (part 1). Secondly, based on previous research in the field and the analysis of the economic and financial development in the region, the theoretical framework is constructed, which is followed by the methodology description and the motivation of the choice of variables (part 2). Finally, econometric techniques are applied to study the research question and the results are discussed (part 3).

Part 1. Theoretical Background and Literature Review

Recent research on economic growth and growth-enhancing mechanisms relies either on the neoclassical theory or the theory of endogenous growth. The theory of endogenous growth differs from other theories and the neoclassical theory in particular by arguing that economic growth results from an economic system rather than from external (or outside) forces.

Following Aghion and Howitt[19] and Grossman and Helpman[20], it is assumed that improvements in the quality of inputs enhance technological progress and, therefore, stimulate growth. In fact, if the growth theory traditionally focused on the country itself with no account for its interaction with the rest of the world. However, the recent developments in the growth theory realize increasing interdependence among countries' economic performances and levels of development[21]. They demonstrate the importance of international trade and account for capital flows as additional sources for financing economic development. For instance, De Mello also adds FDI to the analysis, demonstrating that 'in the presence of FDI, aggregate production in the recipient economy is carried out by combining labour and physical capital'[22]. This is explained by the capacity of FDI to influence production growth either directly through 'increasing the stock of physical capital' in the host economy, or indirectly by stimulating the development of human capital and, thus, upgrading the technological knowledge available in the host economy[23].

In order to proceed with the research, the existing empirical studies on FDI – financial development – economic growth relationship are described below. It is divided into two

[19] Aghion, P., Howitt, P. (1992) 'A Model of Growth Through Creative Destruction', *Econometrica*, Vol. 60, pp. 323-351

[20] Grossman, G., Helpman, E. (1991) 'Quality Ladders in the Theory of Growth', *The Review of Economic Studies*, Vol. 58, pp. 43-61

[21] Grossman, G., Helpman, E. (1994) 'Endogenous Innovation in the Theory of Growth', *The Journal of Economic Perspectives*, Vol. 8, pp. 23-44, p. 38

[22] De Mello, L. (1999) 'Foreign Direct Investment-led Growth: Evidence from Time Series and Panel Data', *Oxford Economic Papers*, Vol. 51, pp. 133-151, p. 135

[23] Ibid.

sections: the first section describes empirical studies on each relationship in question, while the second concentrates on transition countries.

1.1. Empirical Studies

A substantial amount of literature covering the topic indicates of the growing interest to the subject. Recent empirical studies revolve around which variables are to be included into research and which methods are to be used.

This chapter provides an overview of major literature in the field. Although this paper focuses on three types of relationships, the main relationships in question are those between FDI and financial development on the one hand, and FDI and financial development and economic growth on the other. Therefore, the literature review will describe the research done mainly in these fields.

1.1.1. Financial Development and Economic Growth

The relationship between financial development and economic growth is based on the assumption that financial systems promote growth by preventing misallocations of capital and, thus, by reducing the share of savings held in unproductive liquid assets[24].

Probably, the most important contribution to the research area has been made by Ross Levine and Robert King. In the paper 'Finance and Growth: Schumpeter Might be Right' taking the Schumpeter's assumption on the role of financial systems[25] as their starting point they argue that financial intermediation is essential for technological innovation and economic growth, and that there exists a positive correlation between the level of financial development and the rates of economic growth. They analyse the level of financial development in 119 countries over 1960-1989 via constructing four indicators of financial

[24] Bencivenga, V., Smith, B. (1991) 'Financial Intermediation and Endogenous Growth', *The Review of Economic Studies*, Vol. 58, pp. 195-209, p. 196
[25] Schumpeter, J.A. (1911)

development, namely the financial depth, which equals the amount of liquid liabilities divided by GDP; a distinction between different types of financial institutions (commercial banks vs. central banks); as well as two credit ratios: the first one calculated as credit issued to private firms divided by the total amount of credit, the second one calculated as credit to private firms divided by GDP[26]. The results demonstrate that the level of financial development appears to be a statistically significant indicator of economic growth and, moreover, can serve as a predictor of the future economic growth.

This topic has been developed in the further paper 'Finance, Entrepreneurship and Growth' written by the same researchers. The authors review the data from the previous paper and extend their analysis including entrepreneurial activities into it. They assume that financial systems influence entrepreneurial activities by choosing promising projects to invest in, mobilising resources, diversifying risks, and revealing potential rewards[27]. Thus, they conclude that better developed financial systems may foster productivity and output growth. The results of both papers are important for government policy implementations and suggest that government policies favouring financial development have a substantial causal effect on economic growth.

Levine, Loayza and Beck[28] (2000a) investigate the problem further in the paper 'Financial Intermediation and Growth: Causality and Causes'. Concentrating on differences in the legal and accounting systems of different countries, they explain how these differences affect the level of financial development and economic growth. The results indicate that exogenous component of financial development has a positive impact on the rates of economic growth[29].

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[26] King, R. G., Levine, R. (1993a), p. 718
[27] King, R. G., Levine, R. (1993b), p. 540
[28] Levine, R., Loyaza, N. and Beck, T. (2000a) 'Financial intermediation and growth: causality and causes', *Journal of Monetary Economics*, Vol. 46, pp. 31-77
[29] Ibid., p. 53

The topic is also discussed in their later paper 'Finance and the Sources of Growth' (Levine, Loayza and Beck[30], 2000b). They evaluate empirically the relationship between financial development, economic growth and three sources of economic growth, namely total factor productivity, physical capital accumulation and private savings rates[31]. Although the results demonstrate an interaction between the level of financial development and both the economic growth and total factor productivity growth, the relationship between financial development and the other two sources remains ambiguous.

To summarise, a more developed financial system tends to mitigate information asymmetry, accumulate savings and allocate financial resources more efficiently, which represents a transmission channel for stimulating growth. Hence, our first hypothesis formulates as follows.

H1: The development of financial systems promotes economic growth. Thus, government policies aimed at financial development is an important growth-enhancing mechanism.

1.1.2. FDI and Economic Growth

Regarding the possible relationship between FDI and economic growth, the intuition behind it relies on the research done by Borensztein, De Gregorio and Lee[32]. The authors analyse FDI inflows to 69 developing countries over 1970-1989. Their findings suggest that FDI has a strong positive effect on economic growth, but, however, this effect is dependent on a country's absorptive capacity, measured by the human capital available[33].

Although the positive influence of FDI on economic growth in a host country has become a conventional fact, there is some evidence in favour of the opposite conclusion. Yet,

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[30] Levine, R., Loyaza, N. and Beck, T. (2000b) 'Finance and the sources of growth', *Journal of Financial Economics*, Vol. 58, pp. 261-300
[31] Ibid., p. 261
[32] Borensztein, E., De Grigorio, J., Lee, J.-W. (1998)
[33] Borensztein, E., De Grigorio, J., Lee, J.-W., p. 123

Mencinger[34] after analysing FDI inflows in eight EU candidate countries over the period 1994-2001 concludes that FDI has an effect on economic growth, though entering the equation with a negative coefficient. He explains the negative impact of FDI inflows by characteristics of FDI and transition economies themselves. For instance, if a higher stock of FDI is followed by growing current account deficit[35], FDI would not contribute to economic growth. Besides, he addresses the crucial role of country size and the concentration of FDI in particular sectors: the small size of a host country as well as the concentration of investments in trade and finance tends to weaken productivity spillovers[36]. Hence, this allows studying specific conditions that would enhance the impact of FDI on economic growth and justifies the empirical research on transition countries. This will allow concentrating on specific characteristics of transition countries and studying them as a natural experiment. Besides, we may expect to obtain some interesting results.

H2: FDI affect positively the host economy and represent the source of economic growth.

1.1.3. Financial Development and FDI

Two general directions of studies exist, the first one focuses on the role of financial institutions (along with legal infrastructure) in attracting FDI, the other concentrates on FDI in the financial sector. Similarly to general theories of FDI, financial sector FDI assumptions are based on the comparison of the costs and benefits of such investments. Most frequently, hypotheses to be tested are information-related, or financial sector FDI based on the 'follow the client' motive[37]. At the same time, macroeconomic volatility, the level of development of

[34] Mencinger, J. (2003) 'Does Foreign Direct Investment Always Enhance Economic Growth?', *KYKLOS*, Vol. 56, pp. 491-508
[35] Ibid., 501
[36] Ibid., p. 505
[37] Garcia Herrero, A., Navia Simon, D. (2003) 'Determinants and Impact of Financial Sector FDI to Emerging Economies: A Home Country's Perspective', Bank of Spain Occasional Paper No. 0308

financial institutions and other institutional factors are among other determinants to be controlled for.

The relationship between financial development and FDI, as well as the influence on economic activities has been also examined using micro-level (or survey) data. Beck, Demirguc-Kunt and Maksimovic[38] examine the impact of legal and financial institutions on the firm size utilising the data on largest firms for 44 countries over 1988-2002. The paper follows the logic that given a certain degree of institutional development (namely financial and legal), large or small firms appear to be more efficient in an economy. In fact, it can be referred to growth in the sense that government policies aiming at economic growth and innovation promoting small firms to expand might fail in the absence of a developed financial system[39]. The results demonstrate a statistically significant relationship between firm size and financial institutions. Moreover, the paper suggests that a higher level of financial development encourages firms to expand.

H3: Financial development acts as a determinant of FDI, since a developed financial infrastructure is likely to attract larger FDI inflows.

1.2. Research on Transition Countries

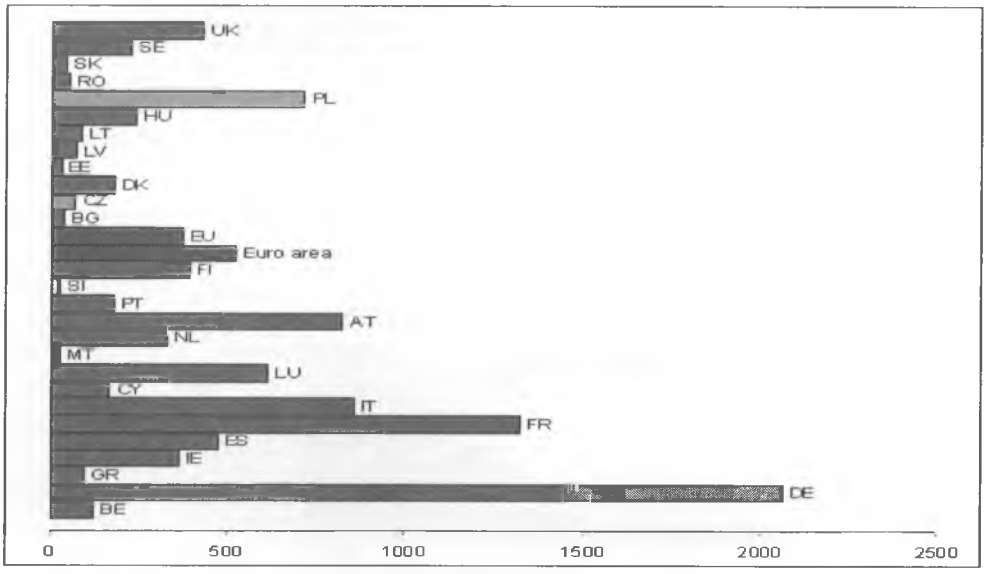
It is evident that properly functioning financial systems contribute to the economic growth by channelling savings into efficient investments[40]. Banks in market economies are viewed as providers of monetary payments, without which the functioning of markets becomes costly[41]. Banks are taken for granted in market economies, their role is broadly

[38] Beck, T., Demirguc-Kunt, A., Maksimovic, V. (2006) 'The Influence of Financial and Legal Institutions on Firm Size', *Journal of Banking and Finance*, Vol. 30, pp. 2995-3015
[39] Ibid., p. 3014
[40] Fink, G., Haiss, P., Orlowski, L., Salvatore, D. (1998) 'Central European Banks and Stock Exchanges: Capacity-Building and Institutional Development', *European Management Journal*, Vol. 16, pp. 431-446, p. 438
[41] Fries, S., Taci, A. (2002) 'Banking Reform and Development in Transition Economies', EBRD Working Paper No. 71, pp. 1-23, p. 1

recognised. However, in centrally planned economies their role has been minimised to providing and allocating resources for plans fulfilment.

Although the development of sound and functioning banking systems to be fundamental for transition, it was not always on the agenda of reforms. However, the establishment of a stable market for capital, which ensures that financial resources are allocated efficiently, is an essential part of the economic transformation[42]. In fact, due to the initial conditions before the transformation and the lack of interest given to banking reforms during the early stages of transition, the weak performance of banking systems in transition is unsurprising[43]. This assumption can be illustrated with the following indicators. In the following picture the indicator calculated by the European Central Bank is demonstrated. It regards financial development as a number of financial institutions operating in a country.

Figure 2 Development of the MFI Sector.



Source: ECB, September 2008

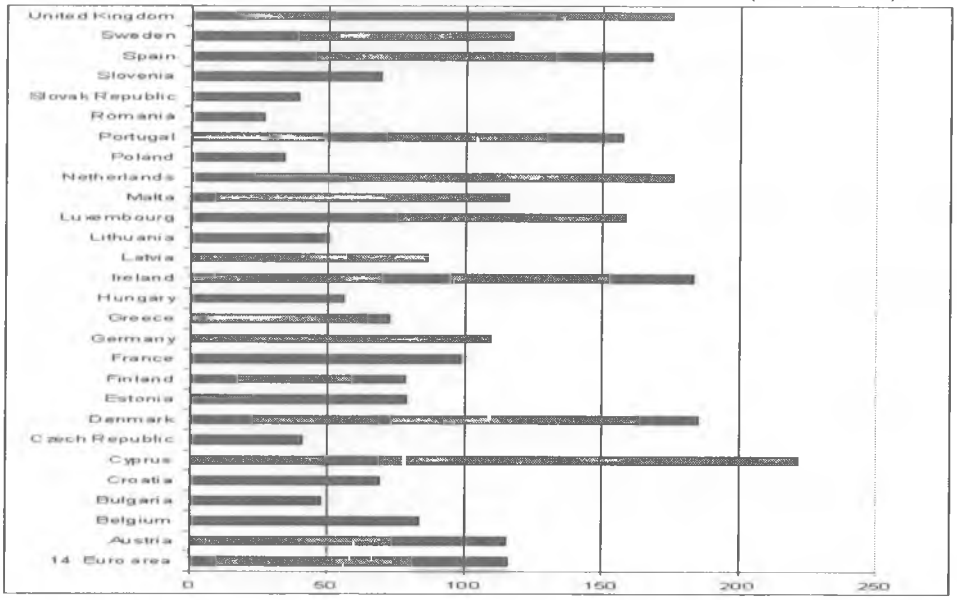
Although this indicator provides some evidence of financial development, this is not always the case. For instance, it is clearly seen that France and Germany are the most

[42] Brainard, L. (1991) 'Reform in Eastern Europe: Creating a Capital Market', Economic Review, January/ February issue, pp. 49-58, p. 50

[43] Fries, S., Neven, D., Seabright, P. (2002) Bank Performance in Transition Economies', William Davidson Working Paper No. 505, pp. 1-30, p. 1

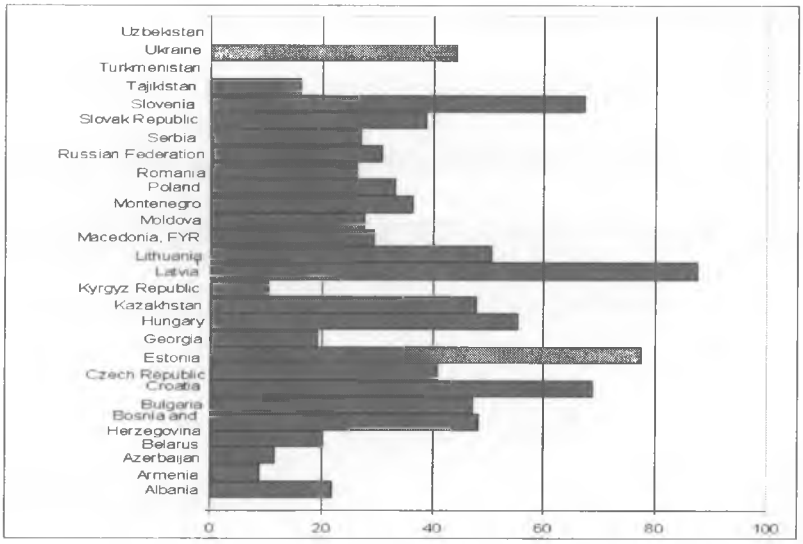
financially developed countries. Even Poland has a higher level of financial development compared, for example, to the UK. However, this figure also demonstrates the division between market-based and bank-based financial systems (the latter are represented by France and Germany as prominent examples). Therefore, relative indices are preferable.

Figure 3 Domestic Credit to Private Sector in the EU Countries (% of GDP), 2006



Source: World Bank WDI

Figure 4 Domestic Credit to Private Sector in the Post-Communist Countries (% of GDP), 2006



Source: World Bank WDI

Apart from the neglect of financial institutions during centrally planned economies, the underdevelopment of financial intermediation during the early stages of transition is also explained by the low level of GDP per capita and the lack of trust in the banking systems[44]. While in normal market conditions banks are supposed to reduce information and incentives problems, such as moral hazard, during the transition period they themselves suffer from difficulties in management due to weak bank supervision and the lack of adequate rules[45].

In fact, Dunning[46] argues that developed infrastructure and support services, such as banking institutions and sound legal and accounting practices, are needed to attract investors and promote efficiency. Hence, financial development has been considered a determinant of FDI.

In line with this, the research on transition countries has been concentrated on the role of FDI in promoting economic growth in transition countries and the determinants of FDI. Regarding the possible relationship between FDI and financial development, several issues have been addressed. Firstly, positive impact of FDI on economic growth in transition economies has been emphasised. FDI is viewed as an important channel for the transmission of ideas, technologies and skills, thus, improving the prospects of growth[47]. Benacek[48] et al. estimate the influence of country-specific characteristics (factor costs, trade barriers, risk and some other factors) on FDI. Their findings suggest that growth potential of an economy along with the market size is the driving force of FDI in CEE countries. However, they also indicate that FDI has had a negative effect on the trade balance in Central Europe[49].

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[44] Fink, G., Haiss, P., Orlowski, L., Salvatore, D., p. 435
[45] Ibid., p. 434
[46] Dunning, J. (2004) 'Institutional Reform, FDI and European Transition Economies' in Grosse, R. (ed) *International Business and Governments in the 21st Century*, Cambridge University Press, Cambridge
[47] Benacek, V., Gronicki, M., Holland, D., Sass, M. (2000) 'The Determinants and Impact of Foreign Direct investment in Cental and Eastern Europe: A Comparison of Survey and Econometric Evidence', *Transnational Corporations, Journal of United Nations*, Vol. 9, pp. 163-212
[48] Ibid.
[49] Ibid., p. 188

Gersl, Rubene and Zumer[50] also analyse the inflows of FDI in CEE countries and discuss productivity spillovers. Spillovers exist due to possible technology transfer from foreign firms and complementarities between domestic and foreign technologies[51]. Surprisingly, they conclude that in many cases spillovers appear to be negative indicating that foreign presence also has an adverse effect on the local firms' productivity[52]. This, however, provides some room for the discussion of factors likely to enhance the effect of FDI or, quite opposite, impede the positive effect of FDI.

Another direction of studies is to evaluate the effect of foreign participation in the financial sector. Yet, Gersl[53] discusses the role of foreign presence in the CEE countries and argues that although foreign banks play a crucial role in developing financial infrastructure in these countries, foreign-owned banks may increase the vulnerability by providing loans in foreign currency or, moreover, lead to the risk of cross-border contagion[54].

On the contrary, a cross-country study conducted by Eller, Haiss and Steiner[55] provides evidence of a more positive effect. The paper estimates the influence of FDI in the financial sector on economic growth in 11 CEE countries. The authors assume that the need to hedge risks locally stimulates the development of financial markets attracting investor in this sector. As a result, corporate investors become able to access a greater variety of financial services, which, in turn, stimulates investment and, thus, economic growth[56]. The results suggest that the relationship between FDI in the financial sector and economic development is not clear and very channel- and sample-dependent[57], which means that the results produced

[50] Gersl, A., Rubene, I., Zumer, T. (2007) 'Foreign Direct Investment and Productivity Spillovers: Updated Evidence from Central and Eastern Europe', CNB Working Paper Series 8
[51] Ibid., p. 19
[52] Ibid., p. 24
[53] Gersl, A. (2007) 'Foreign Banks, Foreign Lending and Cross-Border Contagion: Evidence from the BIS Data', IES Working Paper
[54] Ibid., p. 8
[55] Eller, M., Haiss, P., Steiner, K. (2005)
[56] Ibid., p. 14
[57] Ibid., p. 31

are affected by the set of countries chosen for research and different causal linkages examined.

Finally, there are a substantial number of studies analysing foreign bank participation as a catalyst of economic growth. Three studies in this field are worth mentioning. The first one, conducted by Giannetti and Ongena[58], uses data on 14 transition countries of Eastern Europe and analyses the impact of foreign bank participation on firm growth. The authors discuss the ways in which foreign banks might positively influence the productivity growth. For instance, they argue that foreign banks foster growth by increasing the supply of funding[59]; mitigating agency conflicts[60]; stabilising the financial system by introducing sounder lending practices[61] and importing lending expertise[62]. They conclude that foreign bank participation fosters growth of firms' assets and sales.

The second study by Claeys and Hainz[63] concentrates on evaluating the influence of foreign bank participation on interest rates. They estimate, whether foreign banks by improving access to credit and promoting competition in the banking sector might lower interest rates[64]. The analysis of data on 200 banks in 11 Eastern European countries suggests that foreign bank entry leads to the decrease in interest rates[65]. In fact, the relationship between foreign bank participation and interest rates depends on the mode of entry. Interestingly, foreign newly established banks (de novo banks) tend to impose higher interest rates as compared to foreign acquired banks[66].

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[58] Gianetti, M., Ongena, S. (2005) 'Financial Integration and Entrepreneurial Activity: Evidence from Foreign Bank Entry in Emerging Markets', European Corporate Governance Institute, Brussels, Working paper No. 91
[59] Ibid., p. 9
[60] Ibid., p. 11
[61] Ibid., p. 13
[62] Ibid., p. 11
[63] Claeys, S., Hainz, Ch. (2006) 'Foreign Banks in Eastern Europe: Mode of Entry and Effects on Bank Interest Rates', Governance and the Efficiency of Economic Systems Discussion Paper No. 95
[64] Ibid., p. 2
[65] Ibid., p. 8
[66] Ibid., p. 1

Clarke, Cull, Martinez Peria[67] utilise a survey on 35 firms in developing and transition economies to investigate how foreign bank participation affect access to credit in developing countries. The results demonstrate that in countries with higher levels of foreign bank presence enterprises experience lower financial constraints[68]. Besides, the results suggest that the degree of foreign bank participation might be affected by the quality and the degree of supervision and regulation in the banking sector[69].

H4: FDI and financial development are necessary conditions of economic growth in transition countries.

Therefore, it can be argued that FDI and financial development are complementary and exert a joint effect on economic growth. However, this happens only if certain conditions are present.

H5: The growth-enhancing effect of FDI and financial development is influenced by the quality of institutions and policies in host economies (including legal environment, political stability and business environment).

If the development of financial institutions is not given proper attention, FDI can still act as a source of providing capital for economic development. However, a more developed financial system is likely to enhance economic growth by attracting larger FDI inflows.

H6: FDI can compensate the underdeveloped financial sector by providing financial resources necessary for growth.

1.3. Conclusions on Literature

To summarise the literature (Appendix I), three main fields of research concentrating on variables in question exist. In fact, there is no conventional opinion on any of them, as

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[67] Clarke, G., Cull, R., Martinez Peria, M. (2006) 'Foreign Bank Participation and Access to Credit across Firms in Developing Countries', *Journal of Comparative Economics*, Vol. 34, pp. 774-795
[68] Ibid., p. 792
[69] Ibid., p. 787

different samples and variables included provide controversial results. The role of FDI is, probably, the liveliest discussed topic of recent years. Although several studies with reference to developing countries argue that it has a statistically significant positive influence on economic growth, other researchers refute this argument. Concerning financial development, a debate exist on the differences between bank-based and market-based financial systems, the essence of which is to demonstrate which are more efficient in promoting growth and why. In favour of bank-based systems there are a number of studies concentrating on the role of financial sector FDI in promoting growth. In fact, the preference of either of them does not provide a full picture of the impact of financial development. Hence, both alternatives should be treated equally. This paper would not distinguish between bank-based and market-based systems, but rather treat both banking institutions and stock markets as a part of a financial system.

Another observation suggests that transition countries due to specific characteristics tend not to follow the overall pattern. Thus, there is still room for the research. Interestingly, considering reforms in these countries in the financial and political spheres, including institution building, it is challenging to test the general model on a particular country and describe which country-specific characteristics may influence the behaviour of a model.

Finally, based on previous empirical studies, there is a strong argument for using panel data analysis.

Part 2. Building Framework

First of all, it is required to define the main concepts before proceeding with further reasoning. Thereby, the term foreign direct investment will be used with reference to the UNCTAD definition. UNCTAD defines foreign direct investment as:

'...investment for the purpose of establishing lasting economic relations with an undertaking such as, in particular, investments which give the possibility of exercising an effective influence on the management...'[70].

It is also needed to define financial development as a concept. It should not be confused with or set equal to the financial system (the notion of which is also to be used in this paper to explain the role of financial development and FDI in promoting economic growth). Ang provides the following definition of a financial system:

'A financial system comprises banking institutions, financial markets, other financial intermediaries such as pension funds and insurance companies, and a large regulatory body – a central bank, which oversees and supervises the operations of these intermediaries'[71].

Financial development is, therefore, defined through empirical studies and usually described as the improvement in financial indicators demonstrating the overall better functioning of financial systems.

This chapter will focus on constructing the relationship between the variables, which will result in the model to be tested empirically in the third chapter.

2.1. Financial Development and Economic Growth: A Path of Economic Transformation

In order to provide the motivation for further analysis (especially in what concerns the choice of variables) as well as to explain why the relationship between FDI, financial

[70] UNCTAD (1996) *Code of Liberalisation of Capital Movements*, Annex A, Vol. 2, p. 17
[71] Ang, J. (2008) 'A Survey of Recent Developments in the Literature of Finance and Growth', *Journal of Economic Surveys*, Vol. 22, pp. 536-576, p. 536

development and economic growth exists, it is interesting to describe the transformation process itself. This will demonstrate the uniqueness of studying the questions in the context of transition countries involving the transformation of existing institutions and the establishment of new ones (banks, stock markets). Thus, we start with the description of economic conditions and reforms, in which the relationship in question occurs. This will provide the basis for building theoretical framework and choosing explanatory variables.

Although there is a tradition to treat FDI and financial development as pure substitutes of capital resources in the sense that either domestic or foreign capital is used, the relationship between these variables is more complex. In case of weak financial systems the importance of foreign investment is high. In fact, if one considers the role of FDI in promoting the development of financial systems and, on the contrary, financial development stimulating FDI, the interrelation of these variables becomes obvious. If these variables are independent, will they have a complementary effect on other variables, such as economic growth? Thus, the nature of the relationship has to be defined. In order to do this, it is necessary to understand the environment in which such a relationship exists. The literature analysis suggests that there is a relationship between these variables. However, the conclusions are rather controversial and the clarification with reference to transition countries is needed. The explanation is to be sought in different government policies and reforms paths. As transition represents a unique societal experiment, before defining any relationship between FDI, financial development and economic growth, it is interesting to examine policies and notably the role of reforms in the financial sector, which reflect the path economic transformation and evolution of attitudes towards FDI and financial institutions.

2.1.1. Macroeconomic Policies

In the beginning of the transition period, characterised not only by the collapse of economic systems of redistribution inside countries, but also by the collapse of the Council of Mutual Economic Agreement (CMEA) and, thus, trade connections between the countries of the Soviet block, the choice was whether to preserve trade flows in the region or break them and start from scratch[72]. In effect, the second option has been mostly favoured by CEE countries and the Baltic states, while certain countries of the former Soviet Union, namely Russia, Kazakhstan and Belarus preferred to maintain trade links, which later resulted in the establishment of the Customs union in the early 1990s, joined by the Kyrgyz Republic in 1996[73].

In contrast, the Baltic States have been more oriented towards the EU. For example, Estonia introduced a loose policy of international trade with neither import duties, nor export taxes in the early 1990s[74], which stimulated FDI inflows to the Estonian market. Likewise Estonia, Latvia adopted a new growth plan in 1999 with a view to ameliorate the business environment and enhance the attractiveness of the county. The plan put a considerable accent on the simplification of tax administration, customs clearance and better protection of investors' interests. Another important factor (relevant for both countries) concerned the prospect of the EU accession, which in Latvia resulted in the adoption of the 'Medium Term Economic Strategy in the Context of Accession to the EU' in 1999, a document intended for facilitating the compliance of local laws with the EU norms and regulations.

However, in what concerns policy choices, it is important to discuss certain aspects. Obviously, opening up to foreign trade and the establishment of market economy institutions

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[72] Hare, P. (2001) 'Trade Policy During the Transition: Lessons from the 1990s', *The World Economy*, Vol. 24, pp. 483-511, p. 488

[73] Ibid., p. 489

[74] Eamets, R., Varblane, U., Sostra, K. (2003) 'External Macroeconomic Shocks and the Estonian economy: How did the Russian Financial Crisis affect Estonian Unemployment and Foreign Trade?', *Baltic Journal of Economics*, pp. 5-24, p. 11

for many formerly centrally planned economies involved introduction of more favourable policies towards FDI promising foreign investors various benefits. Still, many countries, and Russia and Ukraine are prominent examples, in attempts to create a stable and functioning domestic market for investment, have placed explicit barriers for FDI[75]. However, in case of Russia, the success in attracting investments differs by region, as considerable level of decision-making is given to local governments. For instance, a number of government programmes created to attract investments encouraged larger FDI inflows and resulted in several investment projects in the North-West of Russia, namely the construction of manufacturing plants (greenfield investment), the most profitable energy sector being still dominated (with the exception of a number important projects) by domestic investment.

Yet, speaking of government policies, it is not sufficient to discuss policies towards FDI in general, as other factors affecting investor decisions matter. For instance, one of the most important factors for transition economies has been signing of international trade agreements, with the particular role in the CEEC, including the Baltic States, and with the prospect of the EU accession. International accords tend to enhance the credibility of investors in a transition economy[76]. Moreover, taking into account the prospect of the EU accession, investors interested in the access to the EU market, started operating in Central Europe, while investors from the EU were interested in accessing attractive large Central European market with relatively cheap workforce.

Another factor is that apart from real barriers to FDI, like restrictions on foreign ownership, indirect barriers have been present as well, such as weak institutional framework[77]. In most countries the state's ability to promote law enforcement and create a

[75] Ibid., p. 497
[76] Kaminski, B. (2001) 'How Accession to the European Union Has Affected External Trade and Foreign Direct investment in Central European Economies', World Bank Policy Research Working Paper No. 2578, pp. 1-43, p. 27
[77] Hare, p. 484

competitive enterprise sector was much weaker than it was under the socialist regime[78]. High levels of corruption, capital flight (the case of Russia), and unstable political environment together with unclear licensing procedures discouraged foreign investments. Countries that could successfully tackle these problems and at the same time could create a favourable environment for investors were at an advantage.

Another crucial role is attributed to countries' macroeconomic policies, especially in what concerns the external debt. For instance, Hungary, which has not defaulted on any of its debts, was perceived as a credible trade partner, which in turn encouraged FDI inflows[79].

Finally, the most important factor has been the removal of restrictions on foreign investments, maintained (and this is still the case in many countries) in socially important sectors, such as banking, telecommunications and utilities. Judging by economic efficiency, the absence of discrimination between foreign and domestic investment is generally viewed as the best policy[80], from which both source and host country can benefit.

In line with this, undeveloped institutional structures, such as banking systems, can also be an impediment for inward FDI, since weak financial institutions, unclear requirements and lack of regulations constitute unfavourable investment climate. This leads to the discussion of the reforms in the financial sector within the bounds of government decisions in other fields.

2.1.2. Financial Sector Transformation

To begin with, it is important to mention that although all regimes have been to a certain extent similar to each other as they originated from the Soviet monobank system, the banking systems differed in different countries. For instance, Yugoslavia was, probably, the

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[78] Kolodko, G. (1999) 'Ten Years of Postsocialist Transition: The Lessons for Policy Reforms', World Bank Policy Research Working Paper No. 2095, pp. 1-28, p. 17

[79] Hare, p. 498

[80] Golub, S. (2003) 'Measures of Restrictions on Inward Foreign Direct Investment for OECD Countries', OECD Economic Studies No. 36, pp. 85-116, p. 108

first centrally planned economy to separate the monetary policy and commercial banking during 1960s, creating a two-tier system. In comparison, Central and Eastern European (CEE) countries and the Baltic States demonopolised their banking structures only in the late 1980s, while the CIS countries established a two-tier system only in the early 1990s[81].

Distinguishing features of financial development in transition economies (in comparison with other countries) also emanate from how financial systems have been treated in Socialist economies, and how changes associated with the economic transformation affect performance of economies as a whole. A brief description of a financial system under central planning and the transformation process is provided below.

In a typical socialist economy the role of the financial intermediation is of low importance. A state bank (or a monobank) has a monopoly over banking functions, including credit allocation. Thus, the monobank has an unlimited capacity to generate bank deposits. Besides, there are specialised banking institutions providing financial services to particular sectors. For instance, there is a bank for agriculture, a foreign trade bank, etc. A distinctive feature of the banking system under central planning is that there are two separate financial circuits[82], one of which serves the household sector by receiving personal income of population in cash and ensuring payments for consumption in cash. The second financial circuit serves enterprises. It receives credits from banks and ensures payments to other budget entities, including other enterprises, using current bank accounts, although still paying wages and salaries in cash. Households are allowed to deposit funds in savings accounts, but at the same time banks serving households are not allowed to engage in transactions with enterprises; the opposite is relevant as well. This organisation leads to little competition for

[81] Tang, H., Zoli, E., Klytchnikova, I. (2000) 'Banking Crises in Transition Countries: Fiscal Costs and Related Issues', World Bank Policy Research Working Paper No. 2484, pp. 1-83, p. 2

[82] Sundararajan, V. (1990), 'Financial sector Reform and Central Banking in Centrally Planned Economies', IMF Working paper 90/120, pp. 1-21, p. 2

funds[83]. Therefore, the role of the monetary system is reduced to financing the production plan announced by the state.

Monetary policy is implemented by controlling the volume of credit available for domestic enterprises and accepting the growth in cash volumes in order to cover the gap between monetary revenues and outlays of the household sector[84]. Although the central bank is granted little autonomy, it is responsible for monitoring of the fulfilment of the plan and guaranteeing that enterprises receive the necessary amount of loans. As a result, enterprises are not forced to follow budget constraints and tend to accumulate real assets, such as equipment and inventories[85]. Moreover, loss-making enterprises become unable to service their existing debts, but banks prefer to refinance existing loans or even provide enterprises with new ones as neither the banks, nor the state itself are willing to push state enterprises into insolvency procedures[86].

As credit is allocated directly to enterprises, interest and exchange rates have virtually no role in the allocative mechanism. Yet, credits are usually provided for enterprises at low fixed interest rates, while exchange rates are mainly used as an accounting device to implement consistently the transactions in foreign and domestic prices[87]. All this leads to the engagement of socialist banks in the misallocation of resources of enormous proportions, which is not reflected in 'conventional measures of the government's fiscal deficit'[88]. As a result of these distortions of banking systems under central planning, in every transition economy commercial banks created after the demonopolisation and division of the assets and liabilities of former monobanks receive a substantial amount of '*bad*' loans which enterprises

[83] Ibid.
[84] Ibid., p. 3
[85] Brainard, L., p. 51
[86] Ibid.
[87] Sundararajan, V., p. 3
[88] Brainard, L., p. 51

could not repay[89]. Due to the nature and structure of socialist banking systems, all transition countries had to restructure their outputs and the use of inputs fundamentally[90].

In fact, although the inherited portfolio of bad loans is considered to have played a major role in banking sector difficulties, especially in the early stages of transition[91], the pace, the extent and the success of banking reforms also depended on the changes in non-financial sectors and the initial macroeconomic environment which shaped the banking reforms[92].

At the same time, most transition economies have followed the same method of transformation of the financial sector advised by the World Bank and the International Monetary Fund. The so-called Washington consensus included the separation of banking functions, namely commercial banking from central banks, the liberalisation of interest rates and the restructuring and privatisation of state-owned banks as well as favouring new banks' entry[93].

Interestingly, while many countries followed this strategy, the scope and speed of reforms have been different depending on the level of institutional reforms. Yet, little progress in institutional and structural reforms together with slow growth in output has resulted in the slow development of banks in many cases[94].

Thus, there are several developmental tasks for banking reforms to fulfil. First task lies in the area of privatisation, which is not always aimed at higher efficiency of banking institutions[95]. It is crucial that enterprise restructuring is accompanied by banking reforms as without proper banking reforms privatisation would fail to ensure an efficient allocation and use of financial resources. The second reason for promoting banking reforms is that they are

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[89] Mitchell, J. (2001) 'Bad Debts and the Cleaning of Banks' Balance Sheets: An Application to Transition Economies', *Journal of Financial Intermediation*, Vol. 10, pp. 1-27, p. 2
[90] Fries, S., p. 9
[91] Ibid.
[92] Ibid.
[93] Fries, S., Taci, A., p. 1
[94] Ibid., p. 2
[95] Ibid., p. 432

necessary for the establishment of an institutional framework in order to promote better monitoring techniques and control of the money supply[96].

Another challenge for banking reforms is to introduce modern banking technologies such as liabilities management. Besides, the reforms should guarantee the liberalisation of financial markets and the removal of entry barriers for foreign investors in the banking sector[97]. Yet, the controversial question of the influence of foreign participation on the development of a domestic banking sector is not in the scope of this paper to be discussed. Instead, the paper does not differentiate between FDI in various sectors, but rather consider its influence on the economy in general. This allows for treating FDI and financial development as complementary variables.

Finally, banking reforms should also promote the introduction of sound monitoring and supervision systems[98] in order to reduce agency conflicts and increase trust in the banking system.

However, several groups of factors are to be considered with regard to the transformation process. The first factor is related to bad loans already discussed above. Besides, the transition process itself cut the profitability of enterprises (the state stopped subsidising them) and reduced their ability to repay debt even more[99]. On the side of foreign trade, the transition economies also experienced a shock due to the collapse of the Council for Mutual Economic Assistance (CMEA)[100]. The external shocks associated with the isolation of foreign trade and internal shocks associated with the transition process have led to a substantial decrease in output in most countries. Following the liberalisation of foreign trade and markets, large state sector deficits and accumulation of monetary balances turned into

[96] Brainard, L., p. 50
[97] Fink, G., Haiss, P., Orlowski, L., Salvatore, D., p. 432
[98] Ibid.
[99] Tang, H., Zoli, E., Klytchnikova, I., p. 10
[100] Ibid., p. 11

open inflation[101]. The natural reaction to hyperinflation has been the reduction of the demand for money from enterprises and households. Hence, the early stages of transition have been marked by a high level of disintermediation. In fact, the non-government sector has suffered most from the underdevelopment of the banking sector resulting in severe recessions[102]. The government reaction has been the introduction of tight monetary policies, which included the increase in nominal interest rate and decrease in inflation, but resulted in the growth of real interest rates, thus, reducing the ability of borrowers to service their debts[103].

Another factor shaping the transformation process is related to the legal environment. In the beginning of the transition period the legal framework regulating both the business environment and financial intermediation was extremely poor. Besides, fraud, insider lending and corruption practices, which have developed from weak institutions, contributed to weakening of financial systems. Thus, the transformation process in the financial sector covered three main dimensions: institutional, operational and financial restructuring[104].

The institutional restructuring is concerned with the environment in which financial institutions operate. The main reforms in this field included the creation of the legal framework, banking supervision and accounting standards. The legal reforms addressed the importance of collateral and bankruptcy laws. This is particularly crucial when corporate governance is weak and in the presence of asymmetric information and, thus, agency conflicts between regulators and banks, or between banks and firm-lending[105].

In line with the institutional restructuring, the operational restructuring deals with the improvement of corporate governance[106]. In the CEE countries the transformation of financial

[101] Fries, S., p. 10
[102] Fries, S., Taci, A., p. 9
[103] Tang, H., Zoli, E., Klytchnikova, I., p. 11
[104] Ibid., 12
[105] Mitchell, J., p. 5
[106] Tang, H., Zoli, E., Klytchnikova, I., p. 15

institutions included their recapitalisation and preparation for further privatisation[107]. In some cases, the operational restructuring through privatisation involved the participation of foreign investors. However, the experience of transition economies demonstrates that if the privatisation of state-owned enterprises and banks resulted in dispersed ownership or, even more, in cross-ownership by different funds or the government, it did not lead to improved corporate governance (the case of the Czech Republic)[108].

Finally, the financial restructuring aims at solving the stock problems[109], notably the problem of bad loans and cleaning of banks' balance sheets. The policy of debt cancellation is considered to be especially relevant for transition countries[110] as it assumed that 'the cancellation of the inherited debts would remove a burden of the past from firms' balance sheets without changing the value of state-owned assets, since all firms and banks were state-owned at the beginning of transition'[111]. In fact, Bulgaria appeared to be the only former socialist country to apply this policy. This affords ground for including these factors in the empirical analysis.

In what concerns stock markets, different policies have been applied. Certain countries developed their stock markets by allowing a small number of initial public offerings (Hungary, Slovenia, Estonia and Latvia), while other countries (the Czech Republic, Slovakia, Lithuania and Romania) introduced stock markets as a tool to 'transfer ownership through mass privatisation'. In the post-Soviet area, stock markets have been introduced through mass privatisation and a number of IPOs. In fact, several countries, namely Belarus, Albania, Bosnia and Herzegovina, Turkmenistan, Tajikistan, have never established stock markets[112].

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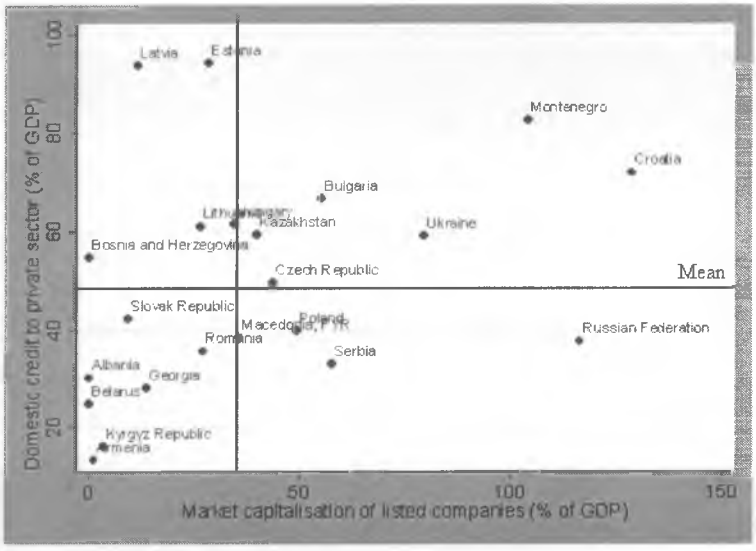
[107] Ibid., p. 16
[108] Tang, H., Zoli, E., Klytchnikova, I., p. 17
[109] Ibid., p. 18
[110] Mitchell, J., p. 3
[111] Ibid.
[112] 76. Berglof, E., Bolton, P. (2003) 'The Great Divide and Beyond – Financial Architecture in Transition', CEPR Discussion Paper No. 3476, pp. 1-54, p. 20

As a result, different architecture of policies and financial structures can be observed in transition countries.

2.1.3. Financial Architecture and Growth-Enhancing Mechanism

The following figure represents the architecture of financial systems in transition in 2007, or a trade-off between the development of the banking sector and stock markets.

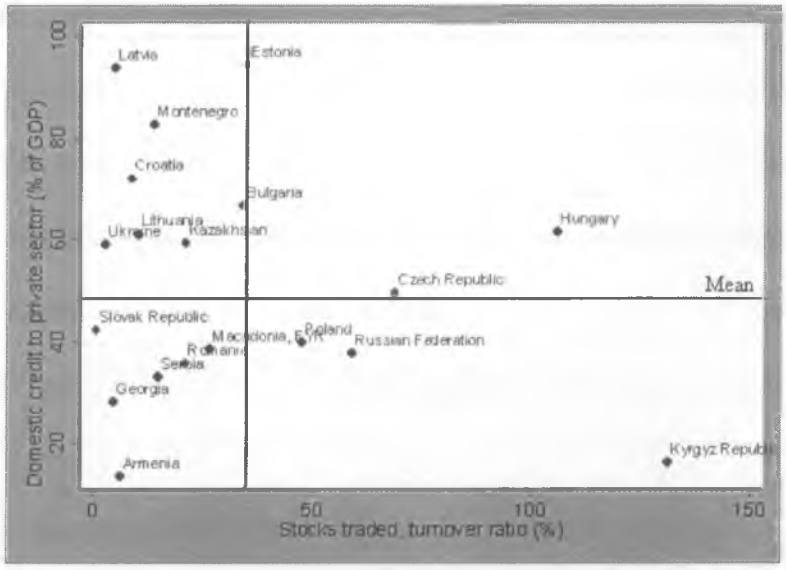
Figure 5 Financial Development in Transition Countries (market capitalisation as a measure of stock markets development), 2007



Source: World Bank WDI, 2008

The picture reflects the outcomes of financial sector reforms demonstrating a clear division in priorities and architecture. It indicates, for instance, of a high development of the Estonian banking sector, while in Russia market capitalisation of listed companies is of major importance. In contrast, Estonia, Latvia, Hungary and Slovakia are not characterised by a high level of market capitalisation, although these countries developed their stock markets quite early. However, in Estonia and Hungary (despite a small number of IPOs) trading in these shares remains high, which is demonstrated on the following graph (figure 5).

Figure 6 Financial Development in Transition (stock turnover as a measure of stock markets development), 2007



Source: World Bank WDI, 2008

The Kyrgyz Republic is an interesting case. Despite the low level of market capitalisation and a weak banking sector, it has a significant turnover ratio. This is due to high level of trading in equity and the prevailing role of the secondary market, which is, in turn, can be explained by relatively advanced (compared to other Asian republics in the post-Soviet area) market infrastructure.

The state of reforms can be reflected through the EBRD transition indicators (table 1). Interestingly, there is a striking difference between the new EU members and other transition countries, especially in what concerns banking reform, competition policy and the overall infrastructure reform. For instance, Croatia, the Czech Republic, Latvia, Hungary and Estonia has been ranked 4, which indicates of a high level of laws and regulations in the banking sector, competition and supervision. This is also supported by the high level of financial development in these countries as judging by the indicator of market capitalisation and banking sector development. Along with other reforms, this represents an important locational advantage for attracting FDI inflows as well as a crucial factor stimulating growth. The indicators show that still a lot has to be done for financial development, although CEE

countries are clearly ahead of other transition economies, while SEE countries and Asian republics of FSU remain underdeveloped, especially in what concerns reforms in the financial sector. However, in case of CEE countries the EU accession, accompanied by the introduction of banking regulations and supervision as a part of 'acquis communautaire', has played a crucial role. The indicators of the progress in reforms will be included into analysis.

Table 1 Transition Indicators, 2007

	Large scale privatisation	Small scale privatisation	Enterprise restructuring	Price liberalisation	Competition Policy	Banking reform & interest rate liberalisation	Securities markets & non-bank financial institutions	Overall infrastructure reform
ANIA	3.00	4.00	2.33	4.33	2.00	2.67	1.67	2.33
IENIA	3.67	4.00	2.33	4.33	2.33	2.67	2.00	2.33
RBAIJAN	2.00	3.67	2.00	4.00	2.00	2.33	1.67	2.00
ARUS	1.00	2.33	1.00	2.67	2.00	2.00	2.00	1.33
NIA AND HERZEGOVINA	3.00	3.00	2.00	4.00	2.00	2.67	1.67	2.33
GARIA	4.00	4.00	2.67	4.33	2.67	3.67	2.67	3.00
ATIA	3.33	4.33	3.00	4.00	2.67	4.00	3.00	3.00
CH REPUBLIC	4.00	4.33	3.33	4.33	3.00	4.00	3.67	3.33
ONIA	4.00	4.33	3.67	4.33	3.67	4.00	3.67	3.33
RGIA	4.00	4.00	2.33	4.33	2.00	2.67	1.67	2.33
GARY	4.00	4.33	3.67	4.33	3.33	4.00	4.00	3.67
AKHSTAN	3.00	4.00	2.00	4.00	2.00	3.00	2.67	2.67
RGYZ REPUBLIC	3.67	4.00	2.00	4.33	2.00	2.33	2.00	1.67
VIA	3.67	4.33	3.00	4.33	3.00	4.00	3.00	3.00
HUANIA	4.00	4.33	3.00	4.33	3.33	3.67	3.33	3.00
MACEDONIA	3.33	4.00	2.67	4.33	2.33	2.67	2.33	2.33
LDOVA	3.00	3.67	2.00	4.00	2.33	3.00	2.00	2.33
NTENEGRO	3.33	3.67	2.00	4.00	1.67	2.67	1.67	2.00
AND	3.33	4.33	3.67	4.33	3.33	3.67	3.67	3.33
MANIA	3.67	3.67	2.67	4.33	2.67	3.33	2.67	3.33
SSIAN FEDERATION	3.00	4.00	2.33	4.00	2.33	2.67	3.00	2.67
BIA	2.67	3.67	2.33	4.00	2.00	2.67	2.00	2.00
VAK REPUBLIC	4.00	4.33	3.67	4.33	3.33	3.67	3.00	3.00
VENIA	3.00	4.33	3.00	4.00	2.67	3.33	2.67	3.00
IKISTAN	2.33	4.00	1.67	3.67	1.67	2.33	1.00	1.33
RKMENISTAN	1.00	2.00	1.00	2.67	1.00	1.00	1.00	1.00
RAINE	3.00	4.00	2.00	4.00	2.33	3.00	2.67	2.33
BEKISTAN	2.67	3.33	1.67	2.67	1.67	1.67	2.00	1.67

Source: EBRD, December 2008

At the same time, the role of financial systems for attracting FDI and by this promoting economic growth can be explained through studying the determinants of FDI. This raises the question of the correctness of considering both banking sector and stock markets development. According to general financial services view[113], the type of a financial system does not matter for economic outcome. Thus, the only policy advice relevant for transition countries is the reduction of transaction costs and law enforcement. Although having started from somewhat similar initial conditions, all transition countries developed different financial infrastructures.

From a different perspective, financial development is explained according to two motives. So, the creation of financial institutions may follow two patterns: demand-following or supply-leading. Demand-following means that the establishment of financial infrastructure is a response for the development of the real sector and investment[114]. The supply-leading motive means that financial development precedes economic growth[115]. This also indicates of a two-way causality between financial development and growth. In any case, the task for policy makers is to ensure institution building for better and efficient investment allocation.

The literature suggests the following structure of the relationship between FDI, financial development and economic growth (figure 7). Although the reverse causality is valid, this paper will concentrate on the direct relationship. The challenge is to examine whether this structure of relationship is also valid for the transition period.

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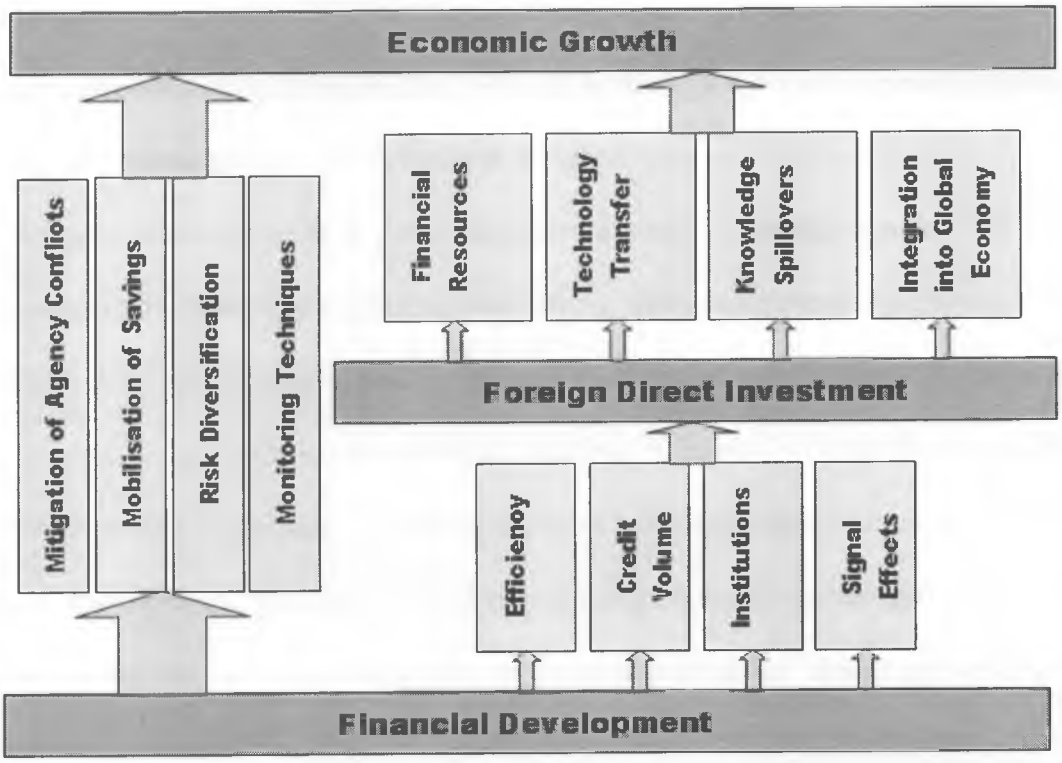
[113] Ndikumana, L. (2005) 'Financial Development, Financial Structure and Domestic Investment: International Evidence', *Journal of International Money and Finace*, Vol. 24, pp. 651-673, p. 654

[114] Patrick, H.T. (1966) 'Financial Development and Economic Growth in Underdeveloped Countries', *Economic Development and Cultural Change*, Vol. 14, pp. 174-189, p. 174

[115] Ibid., p. 175

Figure 7 FDI, Financial Development and Economic Growth



Against this background, the proposed methodology of analysing the relationship between FDI, financial development and economic growth, the proposed set of variables and the model itself are discussed in the following part.

2.2. Methodology

In order to test whether FDI and financial development exert a complementary effect on economic growth, panel data analysis will be applied as the main research technique, accompanied by factor analysis and cointegration tests.

The motivation to use panel data analysis relies on the fact that it allows controlling for country-specific effects and capturing time effects. The specific regression models are to be identified with special tests (random effects vs. fixed effects). Probably, time series analysis would be a better choice in estimating long-run relationship between the variables in question. However, it is difficult to conduct a proper time series analysis due to the lack of data on the transition countries (the period of estimation is not long enough), a substantial amount of missing data, and the need to control for structural breaks. Hence, the solution is to use panel data regressions.

As far as the sample is concerned, after describing the theoretical framework (background and the transformation process as well as policies in transition economies) it is interesting to study the transition period as a natural experiment and capture the influence of reforms with various instrumental variables. The provisional sample includes the CEE countries, Russia and the CIS countries over the period of 1989-2007. In fact, the estimation period is constraint to data availability. Thus, the model will be first estimated for the full observation period, after that the period will be reduced. Apart from avoiding too much missing data in the sample, this will also allow to test whether the results obtained are consistent regardless the time period analysed.

Table 2 Sample

List of Countries	
Albania	Lithuania
Armenia	Macedonia
Azerbaijan	Moldova
Belarus	Montenegro
Bosnia and Herzegovina	Poland

Bulgaria
Croatia
Czech Republic
Estonia
Georgia
Hungary
Kazakhstan
Kyrgyz Republic
Latvia
Romania
Russian Federation
Serbia
Slovak Republic
Slovenia
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

The model applied in the paper will follow the model of endogenous growth, assuming that growth results from internal factors of a system rather than outside forces.

Suggesting that the economy is visualised as based on two factors of production, namely capital and labour, which are used to generate the output. Following Romer[116], Solow[117] (neoclassical model) and Uzawa[118], we suggest taking the Cobb-Douglas function and the Lucas function as a starting point, assuming that the aggregate production function follows the pattern:

$$Y(t) = F(K(t), L_p(t); t) \quad (2.1)$$

In this case, any change in technology is reflected by the shift in this production function[119]. K and L represent factors of production, capital and labour respectively. We would also follow De Mello[120] adding FDI into the analysis as a source of capital. Thus, we will investigate how capital provided from various sources (domestic- and foreign-owned) and labour (or human capital) are used to enhance growth. This will form the basis for further analysis.

Against this background, the model includes both FDI and financial development variables as well as other factors influencing economic growth. In the model presented below

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[116] Romer, P. (1994) 'The Origins of Endogenous Growth', *The Journal of Economic Perspectives*, Vol. 8, pp. 3-22

[117] Solow, R. (19560 'A Contribution to the Theory of Economic Growth', *The Quartely Journal of Economics*, Vol. 70, pp. 65-94

[118] Uzawa, H. (1965) 'Optimum Technical Change in an Aggregative Model of Economic Growth', *International Economic Review*, Vol. 6, pp. 18-31

[119] Uzawa, p. 18

[120] De Mello, L. (1999)

i is used to denote country (group), t to denote time (or year) and ε_{it} to denote the error term. It is constructed as follows:

$$\begin{cases} Growth_{it} = \gamma_i FDI_{it} + \theta_i FinDevelopment_{it} + \sum_{i=1}^{n} \lambda_i Z_{it} + \varepsilon_{it} \\ FDI_{it} = \delta_i FinDevelopment_{it} + \sum_{i=1}^{n} \beta_i Y_{it} + \varepsilon'_{it} \end{cases} \quad (2.2)$$

where

$$FinDevelopment_{it} = \sum_{i=1}^{n} \alpha_i X_{it} + \varepsilon''_{it} \quad (2.3)$$

X, Y, Z represent variables influencing financial development, FDI and growth respectively. Finally, we obtain the following basic equation, which is going to be tested empirically:

$$Growth_{it} = (\gamma_i \delta_i + \theta_i) \sum_{i=1}^{n} \alpha_i X_{it} + \sum_{i=1}^{n} \beta_i Y_{it} + \sum_{i=1}^{n} \lambda_i Z_{it} + \varepsilon_{it} \quad (2.4)$$

We expect a number of institutional variables to exert an impact on this relationship. Hence, three dimensions surrounding this relationship will be analysed with the help of different econometric techniques, namely the legal environment, political decisions and the business environment. For instance, as far as FDI is concerned, following various studies on the determinants of FDI, the quality of legal institutions, price liberalisation, political stability, openness to international trade and financial development are likely to influence the attractiveness of a host country for foreign investors. At the same time, financial development is affected by regulatory environment, quality of government institutions, and level of reforms (especially in the financial sector). Finally, economic growth is influenced by (apart from the factors mentioned above) social capital (population and its skills) and the level of technology.

Growth is the dependent variable representing economic growth. Economic growth, or the increase in the production in an economy over time, is conventionally measured on per capita basis for comparison purposes. In fact, several indicators can be used as a measure of

growth, the paper will follow the commonly used approach utilising GDP per capita growth as a proxy for economic growth. FDI (FDI inflows) serves as an explanatory variable along with financial development and conditioning set. In order to test signal effects for FDI, financial development will be used as an instrumental variable affecting FDI. In fact, considering that there is a direct positive relationship between financial development and growth, it is possible to treat both FDI and financial variables as explanatory. To test for the complementary effect of FDI and financial development an interaction of these variables can be introduced in the equation. Besides, cointegration tests will be performed to demonstrate a persistent relationship between these variables.

As a proxy for financial development two indicators will be used: banking credit to private sector and market capitalisation as a proportion of GDP (to capture both the banking sector and the stock market). However, the question of choosing a proxy of financial development is rather controversial. Including into the equation too many proxies of financial development may cause the multicollinearity problem again (as emphasised in Ang[121]). Besides, aggregate indicators are often criticised for they do not illustrate the quality of financial systems. Nevertheless, due to their availability and convenience, they are used in current research.

The usage of both stock market and banking institutions proxies can be justified by the fact, that in reality the choice between markets and banks is not in question, as, obviously, both are required[122]. Indeed, bearing in mind that stock markets may be very important as an alternative source of capital and following a series of IPO conducted in a number of transition countries, this variable cannot be ignored. The conditioning set includes other variables which are likely to influence economic growth as well as FDI inflows and financial development. The conditioning set controls for institutional variables, namely legal and accounting

[121] Ang, p. 32
[122] Driffill, p. 367

standards, the level of government regulation, the quality of regulation. The intuition behind including these control variables relies on the fact that economic growth, the level of financial development as well as FDI inflows depend on the quality of different institutions in the country. As institutions represent the rules of the game in a society[123] and shape both formal and informal practices existing in a society, analysis of them may help to explain, why given similar initial conditions, countries witness different speed and level of economic growth. A comprehensive description of variables is given in the following part.

The strategy for approaching the main research question consists of three steps. The main method applied is panel data analysis, which enables to estimate the relationship in question between countries and over a period of time. Besides, factor analysis is employed to explore the importance of institutional factors for economic growth. It is applied to investigate which qualitative characteristics of economic environment (treated exogenously) are likely to influence economic growth. It also provides an illustration of mechanisms, through which higher level of economic growth can be attained. Finally, cointegration tests are applied to demonstrate that three variables are interdependent and this interdependence is permanent in the long run.

The data used for the model is taken from various sources. The World Bank World Development Indicators will be used to construct dependent and explanatory variables. The EBRD data on transition countries represents a useful dataset to reflect various development indicators. World Governance Indicators will be also employed to construct control variables. A comprehensive data description is provided in the last part of this chapter.

[123] North, D. C. (1990) *Institutions, Institutional Change and Economic Performance*, Cambridge, Cambridge University Press

2.3. Variables

2.3.1. The Measure of Financial Development

Starting from the early studies, the measure of financial development has been constantly changing. The most common variable is the one proposed by R. Levine, namely the financial depth, or the ratio of liquid liabilities to GDP (which 'consist of currency held outside the banking system plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries')[124]. Apart from this, the authors constructed three other indicators of financial development: one distinguishes between different financial institutions (central banks from commercial banks); two other represent the ratios of credit issued to non-financial private firms divided by total credit or GDP respectively. These variables capture the development of the banking sector and are easy to use in empirical research. The logic is simple: the variables help to capture the volume of transactions in the banking sector, thus, indicating of its development.

Some other studies have found the usage of these variables insufficient. In a later study, Levine, Loayza and Beck[125] also suggest using the ratio of assets of deposit money banks to the assets of all banking institutions in total, capturing the size of banks. However, Claessens and Laeven[126] suggest that the size of the banking sector and the volume of credit available for domestic economy is not the only factor that matters. Yet, the degree of concentration and competition in the banking sector can serve as the indicator of the efficiency of delivering financial services[127]. At the same time they conclude that limited competition may be even fruitful for the development of financial systems[128], as in most

[124] King, R. G., Levine, R. (1993a), p. 720
[125] Levine, R., Loayza, N. and Beck, T. (2000a)
[126] Claessens, S., Laeven, L. (2004) 'Competition in the Financial Sector and Growth: A Cross-Country Perspective' in Goodhart, Ch.A.E., ed. (2004) *Financial Development and Economic Growth. Explaining the Links*, Basingstoke, New York, Palgrave Macmillan
[127] Ibid., p. 66
[128] Ibid., p. 98

transition countries formal institutions supposed to ensure the functioning of financial systems are extremely weak. Thus, relationships lending becomes increasingly important.

Another commonly used variable is the ratio of M2 (money supply) to GDP as in Calderon and Liu[129]. In fact, this measure does not reflect the development of the financial sector, as M2 also includes currency in circulation. Therefore, a better choice is to use (M2-M1) measure instead as in Rousseau and Vulthipadadorn[130].

This paper will follow the classic approach and use the indicator of domestic credit to private sector to GDP as the measure of the development of banking sector. The choice is explained by data availability and simplicity of application of this variable, since it indicates of how much resources are available for the needs of local enterprises.

In what concerns stock markets, there exist two conventional variables to measure the development of stock markets. For instance, Arestis, Demetriades and Luintel[131] argue that liquidity-based measures of stock market development are closely related to economic growth (such as the ratio of the value of shared traded to GDP[132]) as compared to market capitalisation. Market capitalisation is, in fact, the most broadly used variable due to its availability.

It is often presented in the research that stock markets and banks act as substitutes[133] providing financing for firms. This explains why the preference in the research is either given to one variable or they are studied together but introduced separately in the regression. However, recent studies have concluded that both components of the financial system are important, and they are complementary[134], so have to be treated together. Hence, a country can be classified as financially developed if both components – banking institutions and stock

[129] Calderon, C., Liu, L. (2002) 'The Direction of Causality between Financial Development and Economic Growth', Central Bank of Chile Working Papers, No. 184
[130] Rousseau, P. L., Vuthipadadorn, D. (2005) 'Finance, Investment and Growth : Time Series Evidence from 10 Asian economies', *Journal of Macroeconomics*, Vol. 27, pp. 87-106
[131] Arestis, P., Demetriades, P., Luintel, K. (2001)
[132] Ibid., p. 21
[133] Ibid., p. 19
[134] Ndikumana, L. (2005), p. 654

markets – are present, or their development indicators are above the average[135]. Thus, in this paper an index variable capturing both components will be constructed as an average between the two indicators of financial development, namely credit to private sector and market capitalisation.

2.3.2. The Measure of FDI

Having discussed the importance of FDI in general and the interdependence of FDI, financial development and economic growth as well as analysing policies stimulating economic development, the variable for FDI has to be defined now. Compared to financial development variable, there is less disagreement regarding FDI. The choice is usually between FDI inflows and FDI stock and whether to use lagged form or unlagged form. For instance, Brenton et al.[136] use the stock of FDI and introduce it in their gravity model. In contrast, following Noorbakhsh and Paloni, FDI inflows are considered a more reliable variable rather than FDI stock as data on investment stock are usually expressed in book values and, thus, are not comprehensive as are not adjusted for exchange rate fluctuations and inflation[137].

The other choice is between current values of FDI and lagged. Yet, Atje and Jovanovic[138] argue that investment along with stock market activity are endogenous, hence, initial (as for the beginning of the period) values or prior values are to be used. However, this is not a solution. Instead, Harris suggests using the value of current investment, since the model with lagged investment suffers from omitted variable bias[139]. Thus, this paper will use current values of FDI inflows. Nonetheless, the lagged variable will be also employed in one

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[135] Ibid., p. 659

[136] Brenton, P., Di Mauro, F., Lucke, M. (1999) 'Economic Integration and FDI: An Empirical Analysis of Foreign Investment in the EU and in Central and Eastern Europe', *Empirica*, Vol. 26, pp. 95-121

[137] Noorbakhsh, F., Paloni, A. (2001) 'Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence', *World Development*, Vol. 29, pp. 1593-1610, p. 1596

[138] Atje, R., Jovanovic, B.

[139] Harris, R., p. 141

of the models to use dynamic properties of data. To make this figure comparable among countries, it will be calculated as a proportion of GDP. Besides, following Borensztein et al.[140], since the focus of the paper is on the estimation of the impact of FDI on the host economy, we would not expect FDI outflows to exert similar negative effects for the source economy. Hence, the usage of gross data seems more appropriate for the purposes of this research.

2.3.3. The Measure of Economic Growth

Economic growth is the dependent variable in the model. Considering a vast amount of literature on economic growth, there is a variety of variables reflecting growth used in research. According to the neoclassical growth model, or Solow model, the emphasis is given to measuring technical progress. Thus, the total factor productivity model is used, in which economic growth is represented by the ratio of value added to a weighted average of factors of production, namely capital stock and employment as in Neusser and Kugler[141]. The other most commonly used variable is the growth rate of the per capita GDP, which reflects the growth in the output of an economy, thus, reflecting the economic development (as in works by Levine, Durham, Alfaro et al, and others). In fact, certain authors argue that dynamics of this variable is more important as countries do not stay at their steady states[142]. Hence, a lag of GDP is proposed to be used in estimation. Borensztein et al.[143] also suggest using the variable of initial GDP, which explains the impact of the 'catch-up' effect. However, they utilise the growth rate of GDP per worker instead of GDP per capita to focus on the growth of

[140] Borensztein, E., De Grigorio, J., Lee, J.-W., p. 122
[141] Neusser, K., Kugler, M. (1998) 'Manufacturing Growth and Financial Development: Evidence from OECD Countries', *The Review of Economics and Statistics*, Vol. 80, pp. 638-646
[142] Alfaro, L., Chanda, A., Kalemli-Ozcan, S., Sayek, S., p. 97
[143] Borensztein, E., De Grigorio, J., Lee, J.-W., p. 121

productivity rather than income in general. Quite opposite to this, Stiglitz[144] argues that countries should concentrate on maximising the income of their citizens, not the output in general, so the variable of GNP should be used instead. This has certain aspects of economic background, as the increase in income of population indicates of economic development.

However, as far as financial development and investment concerned, output variable is more appropriate. It demonstrates how production is affected by the development of sources of financing. Neusser and Kugler also argue that the role of financial development in promoting economic growth through the progress in technical knowledge is more visible in its relation to the manufacturing sector[145]. Against this background, they suggest using a narrower indicator – manufacturing sector GDP.

In our case, we are concerned with the growth of the economy in general, so the conventional variable of the growth rate of per capita GDP will be utilised.

2.3.4. Other Explanatory Variables

Apart from the three variables in question, there are certain factors influencing all of them. Thus, a number of instrumental variables will be applied. A whole set of factors may affect economic development and serve as signals for attracting FDI as well as promote the development of financial infrastructure. Indeed, certain legal, governmental and informational preconditions form a channel through which FDI and financial development enhance economic growth more effectively[146]. In line with this, Arestis et al. emphasises that various institutional factors different across countries represent a key factor determining different

[144] Stiglitz, J. (2000) 'Capital Market Liberalization, Economic Growth, and Instability', *World Development*, Vol. 28, pp. 1075-1086, p. 1080
[145] Neusser, K., Kugler, M., p. 639
[146] Honohan, P. (2004) 'Financial Development, Growth and Poverty: How Close are the Links?', in Goodhart, Ch.A.E., ed. (2004) *Financial Development and Economic Growth. Explaining the Links*, Basingstoke, New York, Palgrave Macmillan, p. 22

levels of development[147]. In addition, Driffill suggests that law plays an important role in enhancing the efficiency of financial infrastructure, in particular in CEE countries[148]. The importance of legal practices is explained by the fact that it regulates the relationship between different actors on the market and the weakness of legal institutions may influence investor decisions. Another factor is accounting standards, which mitigate information problems. Hence, the following variables are commonly used: rule of law, corruption, ownership structure, and index of accounting standards (as defined by International Country Risk Guide)[149]. Moreover, legal practice determines the structure of financial system in a country[150].

Another important factor is the quality of business environment. Obviously, improvements in corporate governance, larger and well-functioning private sector, property rights enforcement attract investors and, thus, promote growth. McCaig and Stengos[151] also speak of the importance of societal changes. For instance, they introduce a culture capturing variable – religious composition – explaining that it can be a predictor for the legal structure and rights enforcement[152]. The also suggest including into analysis the variable of years of independence which is likely to enhance countries' opportunities and motivation to develop institutions needed for the economic development[153]. Along with this, they argue that ethnic fractionalisation is likely to boost the development of institutions aimed at maintaining power and control[154]. Although these variables appear to be of low significance, they tend to improve the overall model performance. However, due to ambiguous influence of cultural

[147] Arestis, P., Demetriades, P., Fattouh, B., Mouratidis, K. (2002), p. 118
[148] Driffill, p. 371
[149] For usage see La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R. (1996) 'Law and Finance', NBER Working Paper No. 5661, pp. 1-47
[150] Ergungor, p. 2871
[151] McCaig, B., Stengos, T. (2005) 'Financial Intermediation and Growth: Some Robustness Results', *Economic Letters*, vol. 88, pp. 306-312
[152] Ibid., p. 307
[153] Ibid., p. 308
[154] Ibid.

norms, this paper will use conventional institutional variables reflecting the quality of legal and business environment in general.

Against this background, the variables used in the paper will include price liberalisation, level of privatisation, competition policy and other variables describing business environment (business entry rate, start-up procedures, ease of doing business) represented by EBRD transition indicators and World Bank Indicators. Apart from the business environment, there are certain other factors playing a crucial role in enhancing growth. The first factor is the trade openness calculated as the ratio of the sum of imports and exports to GDP. It is expected that open economies are likely to attract larger FDI inflows. Rajan and Zingales also suggest that financial development in a host country should be positively related to the trade openness[155]. In fact, we fail to find a strong correlation between these variables due to the insufficient level of development of financial systems in transition. Moreover, it is very group-dependent as for the EU countries the correlation coefficient between financial development and trade openness is 51 percent while for the countries outside the EU only 20 per cent[156]. Despite this, countries that trade more are better motivated for creating appropriate institutions[157] and introducing sounder business practices. However, Berthelemy and Varoudakis argue that trade openness can exert a positive impact only under conditions of a well-developed financial system, as otherwise it would be difficult to reallocate capital resources between different sectors[158]. Since there is interdependence between trade openness, financial development, FDI and growth, it is also included in the model.

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[155] Rajan, R.G., Zingales, L., p. 26
[156] Author's calculations
[157] Ibid., p. 33
[158] Berthelemy, J.-C., Varoudakis, A. (1996) 'Models of Financial Development and Growth: A Survey of Recent Literature', in Hermes, N., Lensink, R., eds. (1996) *Financial Development and Economic Growth. Theory and Experiences from Developing Countries*, London, New York, Routledge, p. 80

A growing attention is given to demographic factors as determinants of economic growth. Interestingly, the attention has shifted from the measurement of human capital (larger countries tend to attract more investments due to market-seeking motive) to measurements of social capital (skills of the local workforce matter). The difference in these indicators is whether other factors besides population dynamics (education, health) are included into analysis. Yet, Borensztein et al.[159] find certain complementary effects on growth rates between human capital and FDI, that is to say that FDI may increase the growth rate only if a host economy's absorptive capacity is high enough. In line with this, the role of social capital as an important locational advantage is addressed by Noorbakhsh and Paloni. They argue that educational policies aimed at improving the supply as well as the quality of human capital can positively influence the attractiveness of a host economy for foreign investors[160]. In fact, there is no direct indicator of human capital to be used. The commonly used strategy is to account for the level of education. Even though the level of education in a host economy seems to play an important role, it has a significant effect only for financially developed countries as demonstrated in Berthelemy and Varoudakis[161]. Thus, it is suggested that a different variable should be used instead. Social capital incorporates various characteristics and narrowing it just to the level of education is not enough. This paper will employ the physical quality of life index as a variable for social capital. The advantage of this index is that it does not only account for the level of education, but also covers the level of health. It is constructed as the average of literacy rate, weighted infant mortality rate and weighted life expectancy. However, data on literacy rate is missing for many years and, on the whole, undergoes slight changes over time. Besides, in all the countries in the area the literacy rate is high due to the high level of education system under socialism. As demonstrated in the table 3, literacy rate remains high over the observation period and does not differ much.

[159] Borensztein, E., De Grigorio, J., Lee, J.-W.
[160] Noorbakhsh, F., Paloni, A., p. 1596
[161] Berthelemy, J.-C., Varoudakis, A.

Table 3 Literacy Rate in Transition Countries

Variable	Obs	Mean	Std. Dev.	Min	Max
literacy	33	98.39303	1.355419	94.06	99.77

Source: World Bank WDI, December 2008

Thus, it seems to be irrelevant to use literacy rate as an indicator of qualification of the workforce, and the percentage of population with higher (or equivalent) level of education will be used instead. The range is wider and more observations are available, so we assume it has a stronger explanatory power (table 4).

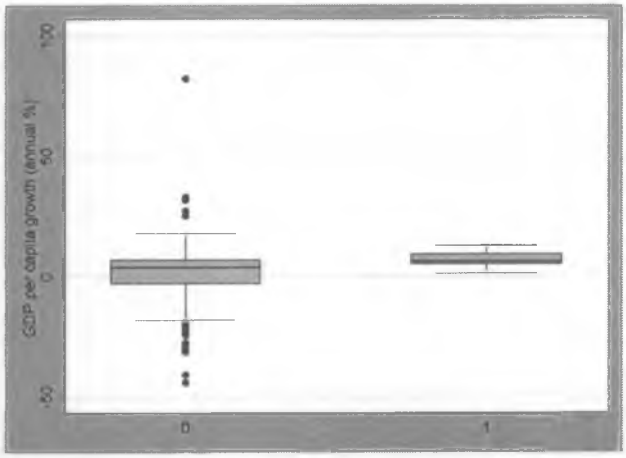
Table 4 Enrolment in Tertiary Education in Transition Countries

Variable	Obs	Mean	Std. Dev.	Min	Max
tertenrol	215	39.86396	18.3211	6.922012	82.98561

Source: World Bank WDI, December 2008

Finally, in order to capture the role international accords, the EU dummy variable will be used along with the level of technology in the host country as reflected by patent applications (or expenditure on research and development, which will be also applied). The logic behind including the EU dummy variable is based on the difference in the economic development of new EU member states and other transition economies. This is illustrated on the following picture (figure 8).

Figure 8 Economic growth in EU vs. non-EU countries

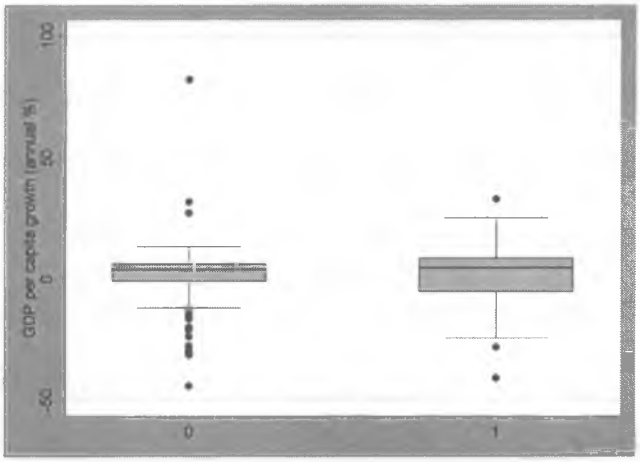


1=EU; 0=non-EU
Source: World Bank WDI, author's calculations

Furthermore, the t-test conducted to test the null hypothesis of no difference between groups rejects the null hypothesis, thus, assuming that these groups differ statistically with 99 per cent of confidence level.

Similarly, speaking of regional cooperation and following the same logic, it might be interesting to create the CIS dummy as well. However, it may be claimed, that CIS is more a political cooperation and its economic role is rather weak. In order to estimate the relevance of this variable, the impact of belonging to this group on economic development is to be examined statistically.

Figure 9 Economic growth in CIS vs. non-CIS countries



1=CIS; 0=non-CIS
Source: World Bank WDI, author's calculations

The t-test conducted to test the null hypothesis of no difference between groups fails to reject the null hypothesis, thus, assuming that these groups do not differ statistically. Hence, it can be suggested that membership in CIS plays no important role for the economic development. Therefore, this variable will not be used for further estimations; and the choice of leaving only the EU dummy is, thus, justified.

2.4. Data Description

Two sources of data are used for estimation. Macroeconomic indicators (GDP, FDI inflows and financial development) are obtained from the World Bank World Development Indicators (WDI)[162]. The World Bank dataset combines data for more than 200 countries, measuring the development and prospects for future growth. We construct the database for 24 transition countries for the period of 1989-2007 in order to capture the transformation process. The data includes indicators of FDI, banking credit to private sector, market capitalisation.

The WDI also include a useful dataset on governance indicators, namely the Country Performance and Institutional Assessment (CPIA), including the assessment of public institutions and business environment which are to be used as instrumental variables. The CPIA indicators evaluate the progress of countries' policies and institutions to support economic growth. In line with this, the performance of every country is assessed against 16 criteria, of which of our particular interest are structural policies. However, there also exist other sources of data that capture governance indicators, such as Worldwide Governance Indicators (WGI), also incorporated in our dataset. The variables taken from this dataset include the indices of political stability and absence of violence (reflect the evaluation of the probability of destabilisation of a political situation in a country, which is especially relevant for certain transition countries, such as former Yugoslavia, Georgia, Armenia, Azerbaijan and Moldova); government effectiveness (measures the quality of public services along with the degree of political independence and quality of implementing policies); rule of law (estimates the confidence of agents in the well-functioning of the legal environment in a society); and control of corruption.

Another set of instrumental variables is provided by the European Bank for Reconstruction and Development (EBRD) – transition indicators. Our dataset for transition

[162] World Bank, World Development Indicators (WDI) December 2008, ESDS International, (Mimas) University of Manchester

indicators covers the same sample over the same period of time and, thus, is compatible with the WDI dataset. Transition indicators reflect the judgement of the EBRD team and report countries' progress in transition. They are constructed according ratings with the scale from 1 (worst performance) to 4 and above (best performance)[163]. Thus, transition indicators evaluate progress in privatisation, governance and enterprise restructuring, price liberalisation and some others. Of particular interest are the indicators of 'banking reform and interest rate liberalisation' along with the development of 'securities market and non-bank financial institutions'.

In fact, measuring institutions, even though based on accurate and objective information, is subject to errors, being aware of this, we should agree on a degree of uncertainty in estimation.

Another problem with data is that due to the specific characteristics of the transition period, there is a necessity to control for structural breaks in data. Hence, all data will be tested on structural breaks.

Besides, based on the same explanation of structural changes and also due to political changes (the emergence of new states), the sample suffers from missing data. This is especially the case of former Soviet Asian republics and former Yugoslavia.

Before proceeding with empirical analysis, the dynamic characteristics of data are to be described. Starting with the dependent variable (economic growth), the dynamics for each country in the sample is presented in the Appendix II. All countries follow the same pattern: after the dramatic decrease in the early stages of transition a recovery process has followed, which started earlier in Central Europe, a bit later in the post-Soviet area (with the exception of Asian republics, where the growth started later when in other countries), and in South

[163] For more information visit http://www.ebrd.com/country/sector/econo/stats/timeth.htm

Europe. In South Europe, namely in the former Yugoslavia republics, the growth has been subject to more fluctuations than elsewhere due to unstable political environment.

Financial development tends to follow an upper trend, similar to growth (Appendix III). However, data on either one or both components (banking sector and stock markets) is missing in many countries (especially in cases of Serbia, Montenegro, Azerbaijan and Armenia, where only few observations are available), which may cause difficulties for further estimation. Besides, in several countries the upward trend is not always sustainable. Surprisingly, a decrease in financial development is observed in the Czech Republic and Slovak Republic (1997-2003) and in Asian republics of the Former Soviet Union (Tajikistan, Uzbekistan and Turkmenistan). In the Czech Republic this has been due to consolidation programmes and liquidation of small banks, which along with restrictive monetary policy measures caused a reduction of confidence in the financial sector[164], which, in turn, resulted in the outflow of deposits and reduction of credits. In Slovakia, the stagnation of the volume of loans in 1997-2000 caused the decline of the volume of credits as a share to GDP; in addition, this period is described by the deterioration of the quality of loans portfolio. After that the banking sector has undergone a restructuring process followed by a consolidation programme in 2002[165]. In what concerns the Asian republics of the FSU, they have witnessed a late round of reforms (in Tajikistan only in the late 1990s due to unstable political environment), including the restructuring of the banking sector and tightening of regulations in order to raise confidence in the banking sector among population[166].

Finally, the dynamics of FDI inflows (as a percentage of GDP) is presented in Appendix IV. With the exception of certain countries, the upward trend is maintained along

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[164] Tuma, Z. (2002) 'Banking Sector Development in the Czech Republic', East-West Conference Working Paper, pp. 1-18, p. 6

[165] Zeman, J., Jurca, P. (2008) 'Macro Stress Testing of the Slovak Banking Sector', NBS Working Paper 1, pp. 1-26, p. 6

[166] See Gurgen, E., Snoek, H., Craig, J., McHugh, J., Izvorski, I., Rooden van, R. (1999) 'Economic Reforms in Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan', IMF Occasional Paper No. 183, pp. 1-71

the observation period. This indicates of a persistent trend to promote investor-friendly policies and offer incentives for investors. Yet, investment peaks in the region have coincided with major privatisation transactions[167], while slowdowns are associated with weak investment climate or simply follow peaks accompanying privatisation. At the same time, a comment should be made on FDI in Russia, as there is a major drawback, which is to be considered in analysis. This is related to the fact that major FDI in Russia have occurred from Cyprus, mainly represented by off-shore companies, so this cannot be regarded as a 'purely' foreign investment[168].

To conclude this part, summary statistics is provided in Appendix VI, demonstrating the availability of data for each indicator, the average value (mean) and both between- and within-group standard deviations. The list of all variables along with the description and sources is given in Appendix V.

[167] Shiells, C. (2003) 'FDI and the Investment Climate in the CIS Countries', IMF Policy Discussion Paper, No. PDP/03/5, pp. 1-34, p. 30
[168] Ibid., p. 11

Part 3. Empirical Models and Results

The aim of this chapter is to test empirically the suggestions made in the previous chapter. The main questions to be approached: the influence of FDI and financial development on economic growth, the simultaneity of this influence and the dependence of this relationship on institutional factors.

The paper will analyse the relationship between FDI, financial development and economic growth using three different statistical methods. First, factor analysis will be applied as a tool for examining the role of financial development and policy changes for economic growth. Besides, a cointegration test will be implemented to evaluate whether financial development and FDI are complementary and exert a joint effect for economic growth. Finally, the model explained in the previous chapter will be tested using a more sophisticated technique – panel data analysis.

3.1. Factor Analysis

Although the interdependence of economic and socio-political changes is recognised in social science, it is difficult to capture political and societal changes as they usually represent a qualitative appraisal of the development of laws, norms and institutions. Hence, factor analysis appears to be a useful tool for indicating the relationship between different characteristics and identifying factors that would otherwise be excluded from the analysis. The usage of factor analysis in this study is justified by an attempt to, first, analyse the possible relationship between different institutional and reforms indicators in order to include them in the model afterwards. The idea of applying factor analysis in this research is also inspired by Adelman and Taft Morris[169], who suggested using factor analysis to explain how political changes influence per capita GNP growth.

[169] Adelman, I., Taft Morris, C. (1965) 'A Factor Analysis of the Interrelationship Between Social and Political Variables and Per Capita Gross National Product', *The Quarterly Journal of Economics*, Vol. 79, pp. 555-578

Factor analysis is based on the estimation of the structure of covariance matrices and is generally performed via two different approaches. The most used is the principal component analysis, which is implemented when the variates are measured in the same units, as otherwise, the method cannot be justified. In contrast to this method, the second approach (factor analysis itself) suggests that random variates are independent from one another[170]. The advantage of this method is that it can imply a significant number of intercorrelated variables. The paper will apply factor analysis as by definition it is more relevant.

The characteristics included into analysis have been selected to reflect changes in the business environment as well as the quality of regulatory framework and changes in institution building. The choice of indicators is described in part 2.3.4 and is designed to summarise the key aspects of economic development of transition countries.

The results of the factor analysis are presented in the form of the matrix of coefficients, indicating factor loadings of each factor. The matrix obtained also explains how variables can be grouped together into common factors. The number of factors decided to be utilised in the study is three. The choice is based on the observation of factor loadings (figure 10) and the scree plot (figure 11).

[170] For details see Lawley, D., Maxwell, A. (1962) 'Factor Analysis as a Statistical Method', *The Statistician*, Vol. 12, pp. 209-229

Figure 10 Factor loadings

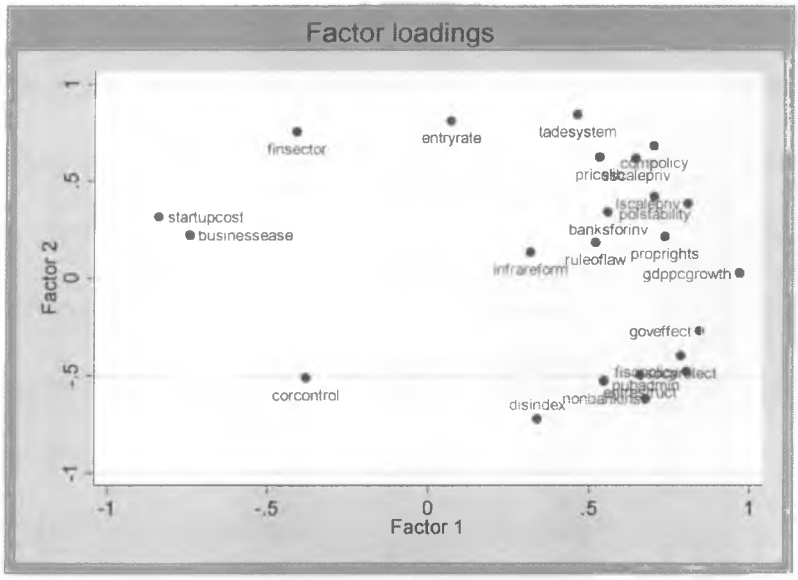
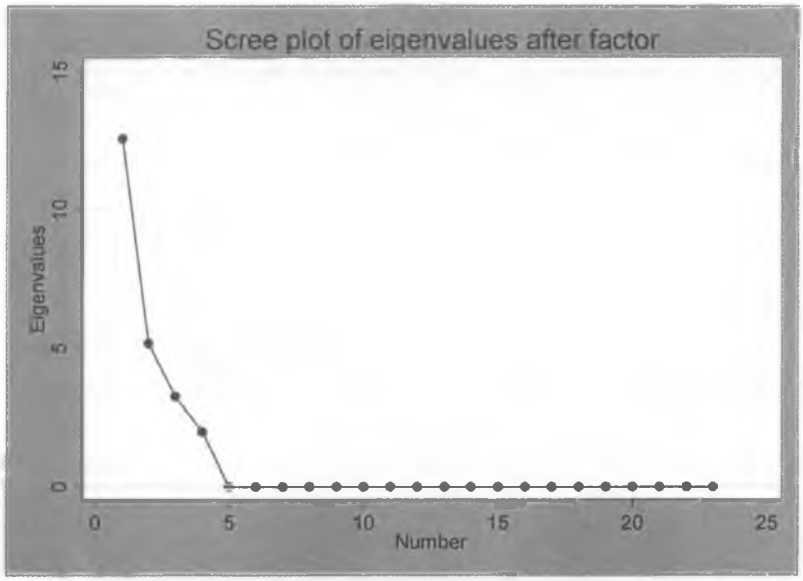


Figure 11 Scree plot



Next, we calculate the communality which shows which part of total variance is explained by three factors taken together and corresponds to the R^2 indicator in regression analysis. In our case, the communality equals:

$$\text{Communality} = 0.94 + 0.0005 + 0.0055 = 0.95 \quad (3.1)$$

The coefficient is quite high, since 95% of variance in per capita GDP growth is attached to three factors derived from the variables. After rotation we obtain the following

table (table 5), where the various characteristics are divided according to their highest loadings in factors. This helps to identify and describe the factors.

Table 5 Results of factor analysis

Variable	Factor1	Factor2	Factor3	Uniqueness
gdppcgrowth	0.6728	0.4559	0.5341	0.0544
lscalepriv	0.3834	0.7168	0.3755	0.1981
sscalepriv		0.9497		0.0448
entrestruct	0.9139			0.1464
pricelib		0.9208		0.1245
tadesystem		0.8491	0.4186	0.0636
compolicy		0.8783	0.4137	0.0457
nonbankinst	0.6650		0.3482	0.3866
infrareform			0.8576	0.2525
disindex	0.5926	-0.5184	0.3197	0.2779
entryrate		0.8694	-0.3036	0.0767
startupcost	-0.8562			0.1717
finsector	-0.8410			0.1890
fiscpolicy	0.9461			0.0766
proprights	0.3061	0.3927	0.6685	0.3052
pubadmin	0.9815			0.0325
socprotect	0.8321			0.2197
businessease	-0.5299		-0.7318	0.1837
banksforinv		0.5403		0.5750
ruleoflaw			0.9826	0.0282
polstability		0.5163	0.7340	0.1757
corcontrol		-0.6321		0.5777
goveffect	0.8709			0.1358

First Factor.

The characteristics which are attached highest loadings in *factor 1* include the level of enterprise restructuring, fiscal policy rating, the quality of public administration, social protection and government effectiveness. Thus, this factor may be interpreted to represent how changes in economic performance are associated with changes in political framework, namely in political decision making. Surprisingly, several characteristics appear to have negative loadings in factor 1. These are rating of the financial sector, costs of starting a business and the ease of doing business. As for the latter characteristic, the negative sign is explained by the nature of the index as 1 is the highest rank attached to the most business-friendly regulations. In what concerns the costs of starting a business, higher costs are likely to reduce the positive effect of factor 1 and impede economic growth, since this variable characterises the obstacles for business development caused by restrictions imposed by the government. Similarly, low rating of the financial sector increases the influence of government decisions. In other words, in the absence of a credible financial system, the economic growth is more vulnerable to the government decisions. This illustrates the

importance of financial development, although the effect is rather indirect. Economic development can be regarded as taking place through the channel of introducing policies promoting growth as well as removing restrictions and promoting financial development.

Second Factor.

Turning to the *factor 2*, highest loadings are attached to the following characteristics: large-scale and small-scale privatisation, price liberalisation, trade and FOREX system, competition policy and the rate of entry of new businesses, all these characteristics adding positively to the importance of the factor. Hence, this factor may be interpreted as the changes in economic performance associated to the quality of business environment in a host country. What is interesting for us here is that the variable of using banks for financing economic activities adds positively to the factor. The existence of a high percentage of investments financed through banks indicates of a better development of banking system and of higher degree of credit accessibility. The effect of factor 2 is also enhanced by two important variables having negative loadings in the factor: disclosure index and control of corruption. Less disclosure and poorer control of corruption increase the influence of this factor.

Third Factor.

Finally, the characteristics having high loadings in *factor 3* include property rights enforcement, political stability and the absence of violence, rule of law and infrastructure reform (actually demonstrating the level of regulations and development of service sector). Since most of variables contributing to this factor are of legal origin, this factor may be interpreted to reflect changes in economic performance associated to the development of the legal framework and changes in laws and regulations which are likely to promote economic

growth. This factor is in line with earlier theoretical findings[171] described in the theoretical part of this paper. The ease of doing business enters again with a negative coefficient indicating that more business-friendly regulations introduced by the government decrease the importance of this factor. In fact, the index of political stability having the highest loading in this factor indicates of a considerable importance of government activities of reducing crime and promoting stability, a characteristic which is not directly associated with the business environment, but is important for evaluating investment climate. This finding supports the idea that policies aimed at attracting investments and promoting economic growth might also include crime prevention measures as well as long-run stability of the functioning of government.

To summarise the analysis, it is important to mention that political decision making (factor 1) contributes to the uttermost to the level of economic growth (96% of variance is explained by this factor), while the quality of legal environment (the second important factor) explains only 7% of variance, and the quality of business environment is of low importance. This supports the idea of including political indicators into further analysis, since in transition countries political institutions tend to play the major role in setting the conditions of functioning of different economic actors.

A crucial indicator for factor analysis, the Cronbach's alpha, equals 0.61 which is low for considering it a reliable indicator. This is partly explained by limited data for transition countries (not enough observations) and its controversial character (WGI are particularly criticised for subjectivity). Hence, factor analysis will be utilised as an illustration for the study and explanation for choosing instrumental variables in panel data analysis.

[171] For instance, this question has been addressed in La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R. (1996); Levine, R. (1999); Beck, T., Demirguc-Kunt, A., Maksimovic, V. (2006); and some others

Alongside with that, factor analysis is a useful tool to predict how different qualitative characteristics of an economic system influence economic growth. Therefore, we include predicted factors in a simple regression model and obtain the following results:

$$Growth_t = 4.8937^* + 0.5905 FDI_t + 2.3769^{**} Factor1_t + 2.0817^{**} Factor2_t + \\ + 1.8252^{**} Factor3_t + \varepsilon_t \quad (3.2)$$

R^2=0.99; Prob>F 0.0245

All three factors appear to be significant at 5 per cent significance level. Yet, the strongest influence is exerted by factor 1, reflecting political decision making. This finding is to be considered for further analysis (despite its low explanatory power due to the lack of observations).

3.2. Cointegration

Cointegration is usually used for the extension of the time series analysis in order to investigate whether there exists a long-run impact of the one variable on the other. If the variables appear to be cointegrated, this means that the series of integrated variables follow the same trends at roughly the same rate[172].

With reference to the FDI-financial development-economic growth nexus, if the respective variables are found to be cointegrated, the effect of growth-enhancing mechanism (through FDI and financial development) can be regarded as permanent. As an example, in a study conducted by De Mello[173], exploiting time series dimension finds that there is a cointegration relationship between FDI and TFP growth in almost all observed countries[174]. Arestis et al.[175] apply the Johansen cointegration analysis by including proxies of economic growth (per capita GDP) and financial development along with other policy variables in the

[172] Greene, W. H. (2002) *Econometric Analysis. Fifth Edition*, New Jersey, Prentice Hall, Pearson Education Ltd, p. 650
[173] De Mello, L. (1999)
[174] De Mello, L., p. 143
[175] Arestis, P., Demetriades, P., Fattouh, B., Mouratidis, K., pp. 115-116

cointegration space. They find that simultaneity effects between the variables, demonstrating, for instance, that 'higher level of economic development is associated with higher level of financial development'[176], since GDP per capita has an expected positive coefficient in their tests.

However, once panel data is used instead of individual time series data, a number of complications occur. Firstly and most importantly, in many cases, the assumption of the independence of cross section unit is invalid. Besides, the analysis of panel data involves a cross section dimension in addition to the times series dimension[177]. Due to these specific characteristics of panel data tests, the analysis of cointegration remains at early stages of implementation[178]. Surprisingly, the problems associated with the application of cointegration in the panel data explain the interest in this technique. Yet, the usage of cointegration techniques allows estimating whether there is a long-run relationship between the variables in question (cointegrated variables) with both time series and cross section dimensions[179]. Recent developments in cointegration tests belong to Westerlund who proposed some new specification tests to estimate the presence of cointegration between the variables in panel datasets. The paper will utilise Westerlund tests to test for cointegration between FDI and financial development above all. The presence of cointegration between these variables will mean that they produce a cumulative permanent effect on economic growth, thus, representing an important growth-enhancing mechanism. Similarly, tests will be applied to the relationship between FDI and economic growth and financial development and economic growth to test whether a long-run relationship between these variables persists as well.

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[176] Ibid., p. 117

[177] Breitung, J., Hashem Pesaran, M. (2005) 'Unit Roots and Cointegraion in Panels', Discussion Paper, Series 1: Economic Studies, No. 42/2005, pp. 1-61, p. 2

[178] Ibid.

[179] Westerlund, J. (2005) 'Testing for Error Correction in Panel Data', *Oxford Bulletin of Economics and Statistics*, Vol. 69, pp. 709-748, p. 709

The tests to be used are specified in Westerlund and described as follows. First, he defines panel and group mean test statistics as[180]:

$$EP_a \equiv (\sum_{i=1}^{N} E_{i11})^{-1} \sum_{i=1}^{N} E_{i12}, \tag{3.3}$$

$$EP_t \equiv \hat{\sigma}^{-1} (\sum_{i=1}^{N} E_{i11})^{-1/2} \sum_{i=1}^{N} E_{i12}, \tag{3.4}$$

$$EG_a \equiv \sum_{i=1}^{N} E_{i11}^{-1} E_{i12}, \tag{3.5}$$

$$EG_t \equiv \sum_{i=1}^{N} \hat{\sigma}^{-1} E_{i11}^{-1/2} E_{i12}, \tag{3.6}$$

where error correction model is generally described as[181]:

$$\Delta y_{it} = \delta_i' d_t + \lambda_i' \Delta x_{it} + \gamma_i \beta_i' z_{it-1} + u_{it}, \tag{3.7}$$

and the parameter γ_i (a coefficient attached to the vector of cointegration variables and containing error correction parameters) specifies the error correction of the error correction model (when it equals to zero, there is no error correction and, thus, no cointegration).

After that, the asymptotic distribution of the error correction model test statistics is studied. This allows applying the asymptotic theory in both dimensions, testing the null hypothesis of no cointegration between the variables. In other words, if the null hypothesis of no error correction is rejected, then the null hypothesis of no cointegration is also rejected[182]. Thus, the test (each one of four of them) is able to demonstrate better (more robust) results than other tests used before.

We proceed with implying Westerlund tests to our panel dataset. Time series is not relevant in this case since not enough observations are available, so cointegration techniques for panels are applied. We imply ECM test statistics to our variables by dividing them into

[180] Westerlund, J. (2005), p. 713
[181] Ibid., p. 3
[182] Ibid., p. 19

following couples: economic growth – FDI, FDI – financial development, economic growth – financial development. For estimating the presence of cointegration between the variables, a sufficient continuous number of observations is needed, which is the main drawback of using the variable of stock market development (market capitalisation and stock turnover) and, as a result, the constructed variable of financial development. Hence, the indicator of banking sector development will be used instead. We calculate the values of EG_t, EG_a, EP_t and EP_a statistics proposed by Westerlund. The null hypothesis of no cointegration is tested by comparing computed values to the critical values. Using the EG_t and EP_a tests we fail to reject the null hypothesis of no cointegration between growth in per capita GDP and FDI. By contrast, using the EG_a and EP_t tests enables us to reject the null hypothesis suggesting that FDI and economic growth are cointegrated. The same EP_t test for economic growth and financial development suggests that these variables are cointegrated. Most importantly, the EG_a and EP_t tests enable to reject the null hypothesis of no cointegration between FDI and financial development (represented by the variable of banking credit to private sector as a percentage of GDP), while the EG_t and EP_a tests fail to do this. All results are obtained with high significance level.

Table 6 Cointegration results, economic growth and FDI

Statistic	Value	Z-value	P-value
Gt	-4.408	-16.820	0.000
Ga	-6.362	-2.870	0.002
Pt	-64.802	-53.288	0.000
Pa	-28.676	-48.695	0.000

Table 7 Cointegration results, economic growth and financial development

Statistic	Value	Z-value	P-value
Gt	-1.824	-4.155	0.000
Ga	-4.939	-1.275	0.101
Pt	-8.657	-5.187	0.000
Pa	-4.157	-5.513	0.000

Table 8 Cointegration results, FDI and financial development

Statistic	Value	Z-value	P-value
Gt	-1.819	-4.050	0.000
Ga	-9.614	-6.389	0.000
Pt	-7.082	-3.881	0.000
Pa	-6.538	-9.519	0.000

As also indicated in Westerlund[183], the EP_t statistics is likely to produce 'more powerful tests in the presence of an invalid common factor restriction'. Thus, the evidence provided by the tests can be interpreted to support the hypothesis of cointegration between FDI and financial development. This provides the basis for treating FDI and financial development as a single mechanism of stimulating economic growth. In other words, this provides the evidence for the hypothesis that these two variables exert a complimentary effect on economic growth. This question will be further investigated using panel data regressions.

3.3. Panel Data Analysis

The choice of using panel data techniques is motivated by the intention to exploit both country and time dimensions of the dataset and the inability of applying a proper time series analysis due to insufficient observations.

However, panel data analysis itself offers a range of tools to approach the research question. The choice is usually between different panel data models, which are identified using various specification tests. The basic model for analysis has also been discussed in the previous chapter and is based on including three variables – FDI inflows, financial development and per capita GDP growth – in the regression along with conditioning set.

The purpose of this part is to estimate the influence of financial development and FDI on economic growth with reference to country specific and time effects (which are likely to differ significantly due to the nature of transition).

[183] Ibid.

3.3.1. Estimation Period 1989-2007

First set of empirical models is estimated for the whole observation period, since all transition countries modified their financial systems (by the establishment of a two-tier system) in the late 80s – beginning of the 90s, followed by a rapid increase in the number of financial institutions established.

The analysis will start with the estimation of the general ordinary least squares (OLS) regression model, where per capita GDP growth is the dependent variable, while FDI inflows and the constructed variable of financial development are independent variables influencing economic growth. We also introduce the interaction term between FDI and financial development, namely FDI inflows multiplied by financial development. This will allow measuring the joint effect of the variables in question on economic growth. The interaction term is expected to have a positive sign, thus, amplifying the effect on economic growth. In effect, in the context of economic transformation, it is rather ambiguous. The other variables included in the model are competition policy and other business environment indicators, indicators of political stability and quality of government institutions, the measures of social capital and technology development. The final set of variables is defined after dropping some of them because of multicollinearity. To ensure the robustness of the results, robust regression estimators are applied. The results are presented in the Appendix VII.

Both FDI and financial development enter the regression with expected positive signs of coefficients indicating of a positive relationship between the variables in question. However, only FDI is significant. As expected, the interaction term tends to improve the performance of the regression and is significant at 10 per cent significance level, but surprisingly, has a negative sign. This is due to the lack of sufficient observations for the index variable. A relatively large coefficient of FDI suggests that that the hypothesis of positive influence of FDI inflows on economic growth cannot be rejected. In favour of this

hypothesis is also the fact that the openness ratio appears to have a substantial positive effect on the growth variable. Hence, this finding is in line with previous studies which demonstrate that countries that trade more win more. Besides, as open economies tend to attract larger FDI inflows, it contributes to the economic growth indirectly through the mechanism of FDI. Country effects are significant and the results are robust.

Moving from the general OLS model, a random effects model will be applied, which is specified as follows[184]:

$$y_{it} = x_{it}'\beta + \alpha + u_i + \varepsilon_{it}, \tag{3.8}$$

or in our case,

$$Growth_{it} = \alpha + \beta_1 FDI_{it} + \beta_2 FinDevelopment_{it} + \beta_3 FDI \times FinDevelopment_{it} + \\ + \beta_4 [Conditions]_{it} + u_i + \varepsilon_{it} \tag{3.9}$$

where u_i represents a group (or country) specific random element and ε_{it} represents the error term. The basic assumption behind the model concerns the individual effects. If 'individual effects are strictly uncorrelated with the regressors', then it is possible to 'model the individual specific constant terms as randomly distributed across cross-sectional units'[185]. In fact, although this model specification provides a tool for the reduction of number of estimated parameters, it may produce inconsistent estimates[186]. On the whole, the GLS estimator is similar to the OLS estimator, and these models would be identical if all the variation between different units was explained by different random elements (u_i)[187].

Turning to the interpretation of the model, the first observation points at the fact that the between-group variance is three times larger than the estimated within-group variance. Hence, judging by this, about 86 per cent of the disturbance variance is due to the variation across countries, while only about 26 per cent is explained by the variation within the groups

[184] Greene, W.H., p. 295
[185] Ibid., p. 293
[186] Ibid.
[187] Ibid., p. 296

(countries). In fact, all the regressors in the model, with the exception of business entry rate, small-scale privatisation and political stability, in other words, qualitative characteristics of economic systems, appear to be insignificant. The variables we are most interested in – FDI, financial development and the interaction between them – are insignificant, and the coefficients, although have expected signs, are of low importance. This may indicate of a poor specification of the model and inappropriate usage of random effects model. To check whether the random effects estimator is inconsistent a number of specification tests are performed. Firstly, the low p-value of Wald chi-statistics suggests that the null hypothesis of no correlation between the regression coefficients and the error term should be rejected, thus, indicating of the invalidity of restrictions assumed for the model, and the variance could no be explained only by the sampling variability. Furthermore, the Breusch-Pagan test is performed to question the validity of the random effects model. The test is based on the estimation of the OLS residuals, and tests the null hypothesis, Lagrangian multiplier is supposed to be distributed as 'chi-squared with one degree of freedom'[188]. In our case, the chi-squared statistics equals 0.16 which does not exceed the critical value for given conditions. Judging by this, we may conclude that the result of the Breusch-Pagan test cannot reject the null hypothesis and does not support the random effects model. Thus, the regression model with a single constant term may be more appropriate for this dataset. This is going to be discussed further in the paper by considering a fixed effects model.

The second model applied is the model with fixed effects. In general, this model is based on the assumption that the 'differences across units can be captured in differences in the constant term'[189].

$$Growth_{it} = \alpha + \beta_1 FDI_{it} + \beta_2 FinDevelopment_{it} + \beta_3 FDI \times FinDevelopment_{it} + \\ + \beta_4 [Conditions]_{it} + \varepsilon_{it} \qquad (3.10)$$

[188] Ibid., p. 299
[189] Ibid., p. 301

The fixed effects model enables to obtain the results similar to the OLS model. The independent variables of FDI and financial development have expected signs of coefficients, although the variable of financial development appears to be insignificant. The interaction between them is still significant, even though the negative coefficient remains. Although the model behaves quite well in general, the results could be improved by a better specification. Other variables which appear to be significant represent the quality of business environment (new businesses registered, enterprise restructuring), quality of government institutions (control of corruption), level of technology (patents applications by residents) and the level of international trade (openness ratio), the latter having an important coefficient, with the openness ratio and control of corruption having expected positive signs. The A statistics reflecting the joint significance of country effects is 8.95. Taking into account a low p-value, the null hypothesis of no country effects can be rejected. Thus, the evidence suggests in favour of a country specific effect in the data. Time effects would be also examined later. Finally, the Hausman test is conducted in order to test the consistency of the fixed effects model. The test is 'based on the parts of the coefficient vectors and the asymptotic covariance matrices that correspond to the slopes in the models that is ignoring the constant term'[190]. In other words, the test describes which model – fixed effects or random effects – is consistent. Chi-squared statistics equals 625.94 and the low p-value enables to reject the null hypothesis that difference in coefficients is not systematic (the individual effects are uncorrelated with the other regressors in the model) in favour of the fixed effects model.

As missing data is quite common in panel models, and this dataset unfortunately represents no exception; a different model can be computed, based on the least squares dummy variables (LSDV) estimator. This estimator is identical to the fixed effects models, but is based on instrumental dummy variables. The LSDV estimator is a way to approach the

[190] Ibid., p. 302

missing data problem by creating a set of dummy variables for each period, which will automatically take care of the missing details[191]. In effect, all time dummy variables created are dropped in the model giving rise to the idea of testing time effects for significance in general. This will be done further in the paper to check whether time effects play any role for the analysis. We take one lag of the dependent variable – GDP per capita growth – and conclude that it is highly significant. FDI inflows and financial development still have expected signs, although financial development is still insignificant. Other variables that appear to be significant belong to different dimensions of economic system. In this model, trade and FOREX system is of high importance with an expected positive sign. In addition to this, political stability and small-scale business privatization seem to influence economic growth significantly. The coefficient attached to FDI is also higher than in previous estimations. This indicates that the effect of these variables is likely to be spread in time.

Another challenge is to test whether time effects play an important role in the model in equal measure, and there is a difference across different time periods, which is not explained by country specific conditions. All models are tested for including time effects estimated together. In all cases, time effects appear to be insignificant. Moreover, they tend to worsen the general performance of regressions.

However, speaking of economic growth, one may assume that initial conditions matter and any changes are unlikely to have an immediate influence on the economic outcome. Hence, there is an intuition behind utilising the dynamic characteristics of the panel dataset (or time dimension) by introducing the lag of the dependent variable. In panel data analysis, the dynamic dimension is introduced by generalised method of moments (GMM) estimator. With adding a lagged variable into the model, the set of independent variables no longer provides the full information that affects the outcome. Instead, any measured effect is

[191] Ibid., p. 293

conditioned on the lagged dependent variable[192]. Another approach to apply dynamic characteristics of data is to use the Arellano and Bond test. The model includes group effects and, thus, applies a simple instrumental variables estimator[193].

As demonstrated by the results (refer to the Appendix VII), first lag of the GDP per capita growth is significant at 1 per cent significance level, but surprisingly, has an unexpected negative sign. FDI, financial development and the interaction term of these variables are insignificant. The EU dummy appears to be significant and has expected positive sign in contrast to previous models indicating of the effect spread in time. The variable reflecting the role of social capital appears to be significant for the first time as well, but has a negative sign. In post estimation of this model a number of specification tests are performed, namely the Arellano-Bond test for autocorrelation and the Sargan and Hansen tests for overidentifying restrictions. The Arellano-Bond test checks if there is serial correlation in the idiosyncratic disturbance term[194]. Even though the overall disturbance term ε_{it} is supposed to be autocorrelated as it contains fixed effects, the role of instruments is therefore to eliminate it. The model, thus, appears to perform well as the null hypothesis of no autocorrelation cannot be rejected. Another crucial assumption of GMM estimator is that all the instruments applied are exogenous[195]. The Sargan/ Hansen test checks for the joint validity of the instruments used in the model. If the model is identified correctly, no invalid instruments will be detected. In this case, the Sargan test demonstrates that the model is not weakened by many instruments and, thus, specified correctly. In contrast, the Hansen test cannot reject the assumption of the validity of instruments. However, many researchers blame these tests for demonstrating weak and controversial results, so the Arellano-Bond test is in many cases preferable for the post-estimation. The model also suggests excluding time effects for further

[192] Ibid., p. 307
[193] Ibid., p. 308
[194] Roodman, D. (2006) 'How to Do xtabond2: An Introduction to 'Difference' and 'System' GMM in Stata', Centre for Global Development Working Paper no. 103, pp. 1-51, p. 34
[195] Ibid., p. 13

estimations as most of the periods are insignificant or dropped because of multicollinearity problem. In general, time effects seem to play no role in the models described above.

Finally, with the exclusion of time effects, more interesting results are produced. Firstly, the lag of economic growth maintains its negative sign and becomes insignificant, while the variables key for the research question of this paper perform better. All three of them (FDI, financial development and the interaction term) are significant and have expected positive signs (except for the interaction term). Most of the variables reflecting qualitative characteristics of the system appear to be significant (with the exception of the competition policy index and enterprise restructuring). With time effects excluded, the Arellano-Bond test demonstrates that the null hypothesis of no first order correlation can be rejected at 10 per cent significance level, so there is serial correlation between the regressors and the disturbance term if AR(1) autocorrelation results are considered. At the same time, the null hypothesis of no second order correlation cannot be rejected, so GMM estimates are consistent.

The last approach to be applied to answer the research question is to estimate the relationship between the variables in question by dividing the equation into separate equations, thus, constructing a system of equations. The technique used is the three-stage estimation for the system of simultaneous equations (3SLS). The basic assumption behind it is that financial development may influence FDI inflows; it is, therefore, used as independent variable in the equation where FDI is the dependent variable. At the same time, FDI is expected to exert a positive effect on economic growth; it acts as independent variable in the equation with per capita GDP growth as the dependent variable. All dependent variables are assumed to be endogenous to the system and correlated with the error term, while all other variables unless specified are exogenous to the system and uncorrelated with the error term. They are considered as instruments for the endogenous variables. To take the initial

conditions into account and utilise the dynamic nature of the dataset, the lag of per capita GDP growth is also included in the first equation. The lag appears to be highly significant, while all other independent variables play no important role. Despite the overall good performance of the regression, it fails to produce expected results. Financial development, although demonstrating expected positive effect on FDI inflows, is insignificant. The only variable which significantly affects FDI inflows is enterprise restructuring index. As expected, higher level of progress in this sphere is likely to attract more investors. The EU factor has a positive impact on economic growth. The interaction between financial development and FDI, although contributing positively to the growth in GDP per capita, remains of low significance.

3.3.2. Estimation Period 1995-2007

The possible further action is to reduce the sample by eliminating the first years of transition, the period for which most data is missing, and concentrating on the period from 1995 to 2007. This choice is also explained by the fact that in the early years of transition there was no economic growth (instead, these years are characterised by decline in production), FDI inflows were limited, and financial development was not on the agenda of economic reforms. This also goes in line with the fact that major economic reforms and changes occurred in the late 1990s (in some countries, in the beginning of 2000s especially in the financial sector).

Montenegro is also excluded from the sample as the observation period for it as an independent state is very short (since 2006).

Starting with a general static panel regression, the results obtained are described below. Surprisingly, the results are consistent with those produced before. FDI inflows are significant and the coefficient attached to this variable maintains its positive sign. The

openness ratio is of major importance and significant. Another variable exerting a considerable impact on the dependent variable is control of corruption. Country effects are also significant. The results are robust, since robust regression estimators are employed.

After that, the regression models with random and fixed effects are run and specification tests are performed. Both Breusch-Pagan and Hausman tests demonstrate results favouring the fixed effects model. In fact, regressions with reduced observation period provide the same results. This generates two observations: first, the results produced by previous tests ere robust; second, this favours the idea of low significance of time effects. Even though structural breaks are to be considered (as they represent an obvious characteristic of the transition period), there appears to be no difference explained by time effects, thus, suggesting that time factor play no role for examining the relationship in question. In other words, the transition period can be treated as a whole observation period. This is also in favour of the idea that the regressors included in the model and their influence on economic growth are persistent across time, although still dependent on country specific effects. Besides, including both financial development variables and the interaction between financial development and FDI may cause collinearity problem, so we test for collinearity and also run regressions without the variable of financial development. In this case, the interaction between FDI and financial development has expected positive sign in the random effects model and a negative sign in the fixed effects model, remaining insignificant in both cases.

Interestingly, after excluding almost all the explanatory variables and leaving only FDI inflows, FDI*Financial Development, the EU dummy, trade openness ratio, the level of technology and physical quality of life index, the results are conspicuous. The first surprising result concerns time effects since they appear to be significant. However, once specification tests for random effects are performed, both Breusch-Pagan and Hausman tests strongly support alternative hypotheses. Thus, the result in this case is rather unpleasant as it has to be

admitted that the model is misspecified, or, in other words, is not parameterised correctly. The choice is whether to consider significant time effects in the absence of other parameters or specify the model more precisely and omit time effects.

Shifting to dynamic panels, we first try to include time effects, but as expected, they play no significant role. After shortening the observation period, first lag of per capita GDP growth is significant and, compared to the model with inclusion of the whole observation period of 1989-2007, has an expected positive sign. However, the openness ratio turns to have a negative sign. At the same time, in comparison with previous models the most significant factor in this case is the rank of trade and FOREX system, which is, in fact, not supported by the openness ratio, supposedly to be related to it and following the same pattern, which renders the overall result (despite the general good performance of the model) doubtful. If the influence of other variables is neglected, the credibility of the model, on the one hand, increases due to a larger number of observations available. Both financial development and FDI inflows have predicted positive signs and are significant. The interaction between them still has a negative sign. The Arellano-Bond test fails to reject the null hypothesis of no second order serial correlation, although the model is still complicated by possible correlation between the error term and the lagged dependent variable as emphasised in Greene[196]. The model in this form may also suffer from the omitted variable bias and, thus, be poorly specified as the whole set of factors, apart from financial development and FDI inflows, is likely to have an impact on economic growth. The performed robustness checks and tests for autocorrelation show that the model performs well.

In general, having estimated two datasets, the one for the whole transition period with data available from 1989 to 2007 for all 28 countries and another one capturing the period from 1995 to 2007 and omitting Montenegro (to avoid missing data and raise its credibility),

[196] Greene, W.H., p. 308

all the models estimated tend to produce almost identical results. Hence, the first conclusion to be emphasised is the robustness and consistency of results. Next, with reference to the main research question (on the complementary effect of FDI and financial development on economic growth), the results are interpreted as follows.

3.3.3. Major Findings

If the results are to be analysed without reference to a particular regression model, several observations are to be made.

Firstly, the results are consistent regardless the time period covered by analysis, which supports the hypothesis of low significance of time effects. At the same time, country effects are important, which indicates of different development paths followed in different countries and different policies adopted as well as of different priorities sets. Concurrently, if two estimation periods are compared to each other, a slight difference in the coefficients obtained is observed. If the whole period is analysed, the coefficients attached to enterprise restructuring, trade and FOREX system and political stability are larger than in case the period capturing only the second half of the nineties is considered. This indicates of higher importance of these indicators in the early stages of transition. At the same time, trade openness ratio becomes more important in the second estimation period.

We will concentrate on explaining unexpected results rather than predicted outcomes of panel data analysis. In fact, it is still important to emphasise that FDI inflows and financial development both have expected signs (that is to say that they exert a positive effect on economic growth, thus, supporting our hypothesis of a simultaneous positive effect). This is also in line with previous studies which have found a positive correlation between financial development and economic growth and between FDI inflows and economic growth. Besides,

this finding is also supported by factor analysis and cointegration analysis described earlier in this chapter.

However, several complicated issues remain and require a detailed explanation. To begin with, the interaction between FDI inflows and financial development, which is supposed to represent the relationship between these variables, appears to have a negative sign in almost all models, which renders the nature of this relationship rather ambiguous. This either supports the idea of substitute effects on economic development (and rejects our hypothesis of complementarity between them) or indicates of the underdevelopment of financial systems in the observed countries in general. An explanation can be found in the characteristics of the transition period. As described in the second part, although FDI have been to some extent provided with attention from policy makers, financial reforms have not been on the agenda in the early stages of transition. That is why the development of international trade was not accompanied by the development of financial systems. Moreover, in most transition countries FDI in the financial sector has been restricted which represented the major impediment for the development of financial institutions.

Although financial development itself exerts a positive effect on economic growth, it remains insignificant in all the models estimated. Despite the fact that financial reforms tend to increase financial indicators reflecting financial development, financial development indicators are nevertheless characterized by a substantial within-country variation, which cannot be often associated with financial sector reforms only[197]. On the contrary, it is also explained by the reversal causality between financial development and economic growth, as growing economies need more resources to support growth. At the same time, it seems that while there was a deceleration in FDI inflows (in the late nineties), governments seeked other source of financing and initiated a number of financial reforms. Interestingly, late reforms in

[197] Benhabib, J., Spiegel, M. (2000), p. 349

the financial sector are also due to the fact that financial underdevelopment represents an indirect barrier for new firms to enter, and incumbents with a certain degree of political influence are likely to prevent (or restrict) new entry[198] by slowing down reforms, because financial development is expected to stimulate competition by facilitating new entry, decreasing the profits of already existing firms[199]. As a result, financial markets in many countries of the FSU remain closed for new entry and foreign competition, in particular. It may be argued though that openness to foreign competition represents a key element of an efficient financial sector policy[200]. Hence, the monetary authorities play an important role in what concerns institution-building and stimulating the establishment of financial institutions[201].

On the whole, the level of financial development in the transition countries remains insignificant to play any important role in encouraging FDI and promoting growth. This finding contradicts earlier works by King and Levine[202], but follows the conclusion of Eller at al.[203] that the relationship between financial and economic development depends on the sample analysed.

In order to obtain better results and analyse the question of the interdependence between FDI and financial development, a profound time series analysis followed by a case study may be applied. Yet, this area represents an interesting research topic and provides serious policy implications as it addresses the question of what can be done in terms of policy choices in order to ensure positive complementary effect of financial development and FDI on economic growth.

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[198] Rajan, R.G., Zingales, L. (2003), p. 20
[199] Ibid., p. 19
[200] Eschenbach, F., Hoekman, B. (2006) 'Services Policy Reform and Economic Growth in Transition Economies, 1990-2004', CEPR Discussion Paper No. 5625, pp. 1-25, p. 20
[201] Patrick, H.T. (1966), p. 186
[202] King, R. G., Levine, R. (1993a), King, R. G., Levine, R. (1993b), Levine, R., Loyaza, N. and Beck, T. (2000a)
[203] Eller, M., Haiss, P., Steiner, K. (2005)

In fact, the negative signs attached to competition policy, business entry rate, new businesses registered, patent applications (reflecting the level of technology in a host country), political stability, physical quality of life index (denoting social capital) and the effectiveness of government are also surprising and difficult to interpret. The same is valid for enterprise restructuring variables and its significant (at 10 per cent level) coefficient. All these variables describe the quality of business and legal environment and the improvements in these fields are expected to promote economic growth by attracting FDI inflows and enhancing the effectiveness of economic system to produce growth (by improving the absorptive capacity of a host economy).

All these variables cannot be neglected for various reasons. We would argue that for transition countries far more than economic development is involved in the transformation process, since the transition process also concerned the creation of new political institutions, new social norms and values (often new attitudes, especially in what concerns private entrepreneurship). This statement is supported by the finding that the crucial factors of economic growth are human capital investment along with macroeconomic stability enhanced by well-functioning institutions and good governance[204]. If a number of reforms covering all sorts of fields (apart from the financial sector reforms discussed earlier) are reviewed, while some countries were in a measure successful (Poland, Slovenia, Slovakia and Hungary) in completing these reforms[205], others have been relatively slow. Besides, some reforms have been given greater attention than others. For instance, CEE countries have managed to develop relatively efficient social security policies compared to Russia and CIS countries, where social benefits, even being originally low, decreased even more over time[206] indicating

[204] Gerry, C.J., Lee, J.-K., Mickiewicz, T.M. (2008) 'Macroeconomic Stability, Governance and Growth: Empirical Lessons from the Post-Communist Transition', UCL SSEES Centre for the Study of Economic and Social Change in Europe, Working Paper No. 89, pp. 1-26, p. 15

[205] Svejnar, J. (2002) 'Transition Economies: Performance and Challenges', *The Journal of Economic Perspectives*, Vol. 16, pp. 3-28, p. 10

[206] Ibid., p. 7

of deteriorating social conditions. As a result, although social indicators in Central Europe and the Baltic States improved (can be also referred to the EU accession), in the Balkan countries (even those not involved in wars) and Russia and CIS countries have declined[207], which led to the establishment of much weaker social safety nets[208] and, resulting from this, worse perceptions and weaker support of reforms (often resistance) from the side of population. At the same time, almost none of the countries researched could rapidly develop a functioning legal system supported by institutions which were supposed to contribute to better property rights protection and enhance proper functioning of a market economy[209]. However, many policy makers sadly failed to consider the importance of such reforms and expecting the free market to create all the necessary conditions, and thus, many vital reforms have been neglected.

Within this framework, policies promoting competition tend to enhance economic growth by fostering innovation, providing wider variety of services and mitigating the power of incumbents. It also provides a mechanism for monitoring the competence of entrepreneurs and withdrawing unsuccessful ones from the market. The same is valid for the competition policy in the banking sector. On the one hand, it may be argued that less concentration in the financial sector may promote financial development and, thus, economic growth by offering a wider range of financial services, which leads to better allocation of resources. Still, certain researchers[210] argue that limited competition may be useful when relationship lending is important. In fact, it may be argued that in the transition period in case of a high level of uncertainty, this happens not because of limited competition that appears to be beneficial, but because of the unwillingness of incumbents to allow other participants to enter the market.

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[207] Ibid., p. 20
[208] Ibid., p. 13
[209] Ibid., p. 7
[210] Claessens, S. and Laeven, L. in Goodhart, Ch.A.E., ed. (2004), p. 98

Yet, private entrepreneurship is a particular social group which is likely to favour reforms[211], especially those that promote the development of competition. Surprisingly, both new business registered and business entry rate (the one and the other reflecting entrepreneurial activity) have negative signs, thus, following the pattern of competition policy variable. This suggests that insufficient attention has been given to the development of private entrepreneurship during the transition, resulting in high concentration of business in many countries. This still allowed countries to develop if growth rates are considered. As a result, this is not probably the right channel for enhancing growth in transition. In a risky environment, big companies (or business groups) that are more efficient at mobilising resources are more likely to survive. In line with this, new innovative small enterprises are less efficient attracting investment due to unstable environment, high risk and unclear outcomes. Thus, it may be argued that in early stages of transition, although the attempts were made to liberalise the market and promote competition, this was of low significance for the economic growth itself. However, the crucial role of these factors cannot be neglected. In all developed economies, private entrepreneurship constitutes the main source of growth, so it may happen that the neglect of this area may result in a slowdown in the future. At the same time, it is closely related to the development of the banking sector. If the banking sector is very concentrated, banks are likely to act as an indirect barrier to entry by favouring incumbents rather than new entrants[212].

The same is valid for the levels of technological development and innovation, which also enter the regression with unexpected signs. Patent applications used as an indicator of innovative activity are supposed to enhance economic growth meaning that new technologies applied tend to increase productivity and efficiency of an economy. This may, on the one

[211] Fidrmuc, J. (1998) 'Political Support for Reforms: Economics of Voting in Transition Countries', Centre for Economic Research, Tilburg University and ECARE, Université Libre de Bruxelles, Working Paper, pp. 1-19, p. 6

[212] Cetorelli, N., Gambera, M. (2001) 'Banking Market Structure, Financial Dependence and Growth: International Evidence from Industry Data', *The Journal of Finance*, Vol. 56, pp. 617-648, p. 645

hand, indicate of low innovative activity. On the other hand, this also reflects the low level of financing innovation or inability to attract investments into this sphere. Yet, when the variable of expenditure on research and development as a percentage of GDP is used instead, the results of both fixed effects and dynamic GMM models demonstrate that this variable exerts a strong positive effect on economic growth and tends to improve the overall performance of the models. Moreover, with the introduction of this indicator into regression along with patent applications, the latter turns to be positive. Hence, the assumption is to be made that there is interdependence between expenditure on research and development and patent applications. In other words, higher research and development expenditure results in a higher number of patent applications, which in turn indicates of higher level of innovation, which attracts larger investment inflows and all these factors foster economic development, representing another important growth-enhancing channel.

Another variable to be thoroughly explored is the constructed physical quality of life index, which captures the role of social capital and evolves around three dimensions: education, mortality rate and life expectancy at birth (the latter two reflecting health and social conditions in a host country). The negative sign of this variable can be given several explanations. Firstly, mortality rate and life expectancy at birth worsened during the transition period. Yet, a remark has to be made that the trend emerged before the transition process itself started and continued to during the period observed. Furthermore, this index (and especially in what concerns higher education component) tends to produce an effect the expression of which is spread in time. Although the level of education seems to decrease slightly (which is, in fact, also relevant for health outcomes), the economic growth is produced by the labour force which got educated before the transition started. This represents a warning signal since if no policy for improving social indicators is introduced, this may constitute a serious impediment for further development. Therefore, social reforms are an important growth-

enhancing mechanism. In the absence of social capital both financial development (which requires a highly qualified personnel) and attracting FDI (since investors still consider labour endowment of a host economy a crucial factor) are impossible.

Finally, speaking of structural characteristics considered exogenous to the system in our model, the signs of political stability and government effectiveness are important. It is obvious that the transition period along with economic risks is associated with political risks due to unstable political environment. In some countries there is still the risk of opportunist behaviour of the government and property redistribution, not to mention the risk of ethnic conflicts (a recurrent topic in Central Asia, Caucasus and former Yugoslavia). Policies aimed at mitigating political conflicts and providing clear government position regarding various economic issues (as well as eliminating the risk of inconsequential policies due to the change of power) may improve investment climate as well as increase investor credibility in a host country. These variables cannot be neglected as most economic decisions are still governed by political will. With reference to the transition period, political risks represent one of major impediments to growth. With regard to financial development, it is one of the key factors, and financial regulation and supervision are still important questions of the discussion of policy implications. Consider the following examples that illustrate the role of political authorities in financial development. For instance, Poland, firstly being an advocate of a liberal policy towards banking, revised the Banking Law in 1992, which enabled the Central Bank to 'enforce provisioning requirements, capital adequacy and exposure limits'[213], making clear the necessity of a fundamental financial and operational restructuring programme. Yet, this policy followed the wave of liberalization as Poland lowered entry barriers to the financial sector (especially, banking, insurance and investment) in the early 1990s[214]. This resulted in the rapid growth of the number of banking institutions in the country. In addition, liberal

[213] Tang, H., Zoli, E., Klytchnikova, I., p. 13
[214] Thimann, C., ed. (2002), *Financial Sectors in EU Accession Countries*, European Central Bank, p. 185

licensing guidelines have been introduced aiming at the demonopolisation of the banking sector, increase in the liquidity and quality of financial services and also a higher level of competition. The similar situation characterised the banking industry in the Czech Republic. However, a stricter regulatory framework has been introduced later. Prudential regulations and banking supervision were introduced in the Czech Republic in 1995, which were further tightened in 1998[215]. What concerns the stock markets in transition, their development has been closely related to the privatisation strategies adopted in different countries[216]. For instance, the strategy of mass privatisation resulted in the rapid establishment of a large number of companies and their listings on stock exchanges. Yet, in the Czech Republic the listing has been mandatory following the mass privatisation programme. Poland, in contrast, has introduced a voluntary IPO scheme, which has not resulted in a significant role of stock markets. In fact, in the absence of sound corporate governance practices, this led to a limited trust in stock markets and massive delistings of companies[217] as it happened in the Czech Republic. Therefore, capital markets seem to play a secondary role in CEE countries, and both Poland and the Czech Republic remain heavily bank-based. Interestingly, at the stage of the EU accession, three characteristic features have been relevant for both countries: the low level of bank intermediation (compared to other EU countries), a strong dominance of banks (bank-based) and a high degree of foreign participation[218]. In contrast, Russia has never considered a strong and well-functioning financial system as a basis for support of economic growth, which probably explains the persistence of the Russian government to maintain restrictions on FDI in certain sectors (and especially in the financial sector).

Finally, the last variable to be discussed – trade openness ratio – is, in general, significant in almost all the models analysed and has an important value of coefficient. Open

[215] Tang, H., Zoli, E., Klytchnikova, I., p. 14
[216] Thimann, C., p. 22
[217] Ibid., p. 22
[218] Thimann, C., p. 17

economies tend to grow faster through trade enhancing mechanism and this also contributes to the FDI-financial development nexus by providing demand for physical capital.

In fact, the possible critique of this kind of estimation concerns the treatment of qualitative characteristics of institutions and systems as exogenous. In contrast, it may be asserted that institutions themselves are a product of the transition period and the result of economic transformation itself, so they must be regarded as an endogenous outcome which renders the analysis more complicated[219]. Treating all systemic variables as exogenous means allowing for simplification of analysis.

[219] Roland, G. (2002) 'The Political Economy of Transition', *The Journal of Economic Perspectives*, Vol. 16, pp. 29-50, p. 36

Conclusion

The process of economic and political transformation from central planning to a market economy, involving the process of the creation of new institutions in the former Communist economies along with the price liberalisation, opening up to foreign trade and the removal of barriers to FDI attracted large FDI inflows in this area in the last few years, which has arguably become one of key factors of economic development in these countries. Besides, after the collapse of the Soviet Union and the whole Communist regime of the command economy, the attitudes in these countries towards market economies and their mechanisms, including financial systems (comprising both banking institutions and stock markets), has been revised, and the importance of a well-functioning financial system as a source of growth has been recognised. This led to the increasing attention from the side of researchers and policy makers to this topic.

As it has been demonstrated, the research so far has been evolving around FDI – economic growth – financial development nexus, yet, without treating all these variables simultaneously. In fact, there is no conventional opinion regarding the impact of FDI and financial development on economic growth. The analysis is complicated by narrowing the subject of research to transition economies, since the transition process itself represents a unique societal experiment.

While the role of FDI has been, probably, the liveliest discussed topic of recent years, and most researchers conclude that it represents an important source of growth, a debate exists on the role of financial development. The main topic developed so far concerns the differences between bank-based and market-based financial systems, the essence of which is to demonstrate which are more efficient in promoting growth and why. In fact, the preference of either of them does not provide a full picture of the impact of financial development. Therefore, the idea of this research have been not distinguish between bank-based and

market-based systems, but rather treat both banking institutions and stock markets as parts of a financial system and estimate financial development as a mechanism promoting growth, regardless which element of it dominates in a country. The paper uses an innovative approach by examining FDI and financial development as sources of economic development simultaneously and, thus, contributes to the existing research.

After having analysed the model using empirical techniques, several interesting results have been produced.

Firstly, as far as panel data analysis is concerned, the results obtained are consistent regardless the time period examined. At the same time, while the findings fail to demonstrate the significance of time effects, country effects are found to be significant, which indicates of different development paths followed in different countries and different policies adopted as well as of different priorities set. The results also favour the hypotheses of positive impact of FDI and financial development on economic growth. Yet, we find that although FDI represents an important growth-enhancing channel, financial development appears to be insignificant.

Secondly, the interaction between FDI and financial development has an ambiguous effect. Due to the results provided by panel data analysis, the interaction term has a negative sign, but is significant in almost all cases. Besides, according to cointegration tests results, the respective variables are found to be cointegrated, so the effect of growth-enhancing mechanism (through FDI and financial development) can be regarded as permanent. Thus, the evidence provided by the tests can be interpreted to support the hypothesis of cointegration between FDI and financial development. This provides the basis for treating FDI and financial development as a single mechanism of stimulating economic growth. On the whole, these findings do not reject the hypothesis of treating FDI and financial development as complementary sources for economic growth, but at the same time, support the hypothesis

that FDI can compensate underdeveloped financial systems. Hence, the findings provide serious policy implications suggesting that policies stimulating the development of financial sector are necessary.

Finally, in line with the previous statement, the results strongly support the hypothesis of the influence of institutions and policies in host economies on the relationship between the variables in question.

This is also demonstrated by factor analysis which evaluates how qualitative characteristics of an economic system influence economic growth. As a result, economic development can be regarded as taking place through the channel of introducing policies promoting growth as well as removing restrictions and promoting financial development (including allowing FDI in the financial sector).

Even though the question of financial sector FDI has not been addressed directly by current research, taking into account that in most transition countries FDI in the financial sector has been restricted, it can be regarded as the major impediment for the development of financial institutions. In line with this, it may also be argued that openness to foreign competition represents a key element of an efficient financial sector policy. Hence, the political authorities play an important role in what concerns institution-building and stimulating the establishment of financial institutions.

In order to obtain better results and analyse the question of the interdependence between FDI and financial development, a profound time series analysis followed by a case study may be applied. Analysing micro level data (or survey) may also be beneficial for further research. Besides, the findings are strongly in favour of further analysis of institutions (and financial and legal institutions in particular) and their role in fostering economic development.

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APPENDIX I. Literature Summary

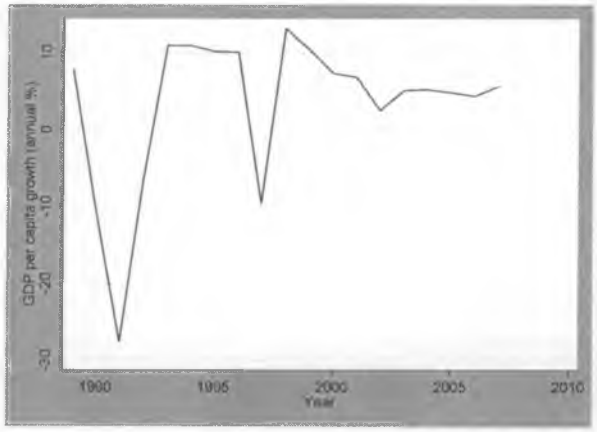
Autor(s)	Year	Topic	Data	Method(s)	Findings
King, Levine	1993	*Finance and Growth: Schumpeter Might be Right*	119 (reduced to 80) developed and developing countries over the period of 1960-1989	Cross-country analysis and time-series analysis	Higher level of financial intermediation leads to faster rates of economic growth, as well as physical capital accumulation and improvements in economic efficiency. The level of financial development can also be used to predict future economic growth
King, Levine	1993	*Finance, Entrepreneurship and Growth*	120 (reduced to 80) developed and developing countries over the period of 1960-1989	Cross-country analysis and case study of financial sector reforms in 5 countries	Financial systems tend to influence entrepreneurial activities that result in productivity improvements. Thus, more efficient financial systems stimulate productivity growth and output growth.
Borensztein, De Gregorio, Lee	1998	*How Does Foreign Direct Investment Affect Economic Growth?*	FDI flows from industrial to 69 developing countries over 1970-1989	Panel data analysis	FDI shows a positive effect on economic growth. Besides, there is a significant interaction between human capital and FDI
Beck, Levine, Loayza	2000	*Finance and the Sources of Growth*	63 countries are averaged over the period of 1960-1995	Cross-sectional instrumental variable estimator and the system dynamic-panel estimator	Evaluate the relationship between the level of financial development, economic growth and the sources of growth (FTP growth, physical capital accumulation and private savings rates). Conclude that financial development influences economic growth and FTP growth, but the relationship between the level of financial development and physical capital accumulation and private savings rates is ambiguous

Autor(s)	Year	Topic	Data	Method(s)	Findings
Levine, Loayza, Beck	2000	*Financial Intermediation and Growth: Causality and Causes*	71 countries over the period of 1960-1995	Cross-sectional analysis, GMM estimators for dynamic panel models	Analyse country-specific differences in accounting and legal systems and conclude, that these differences may affect directly the functioning of financial intermediaries. A positive relation between the exogenous components of financial development and economic growth is found
Mencinger	2003	*Does Foreign Direct Investment Always Enhance Economic Growth?*	8 EU candidate countries over the period 1994-2001	Panel data analysis	FDI has a negative coefficient. Negative impact is explained by characteristics of FDI and candidate countries.
Eller, Haiss, Steiner	2005	*Foreign Direct Investment in the Financial Sector: the Engine of Growth for Central and Eastern Europe?*	Data on 11 CEE countries for the period of 1996-2003	Cross-country panel data analysis	FSFDI may influence the economic growth, but the connection between these variables is dependent on the sample and channel
Giannetti, Ongena	2005	*Financial Integration and Entrepreneurial Activity. Evidence from Foreign Bank Entry in Emerging Markets*	Firm-level data, Banking sector data and macro-level data for 14 Eastern European transition countries for the period of 1993-2003	Cross-country panel data analysis	Foreign bank participation stimulates growth of firm sales and assets. In fact, higher level of foreign bank presence corresponds to lower market shares of small firms
Beck, Demirguc-Kunt, Maksimovic	2006	*The Influence of Financial and Legal Institutions on Firm Size*	Data on the largest industrial firms for 44 countries for the period of 1988-2002	Cross-sectional analysis of firm-level data	Firms tend to be larger in countries with higher level of financial development (stock market and financial institutions)

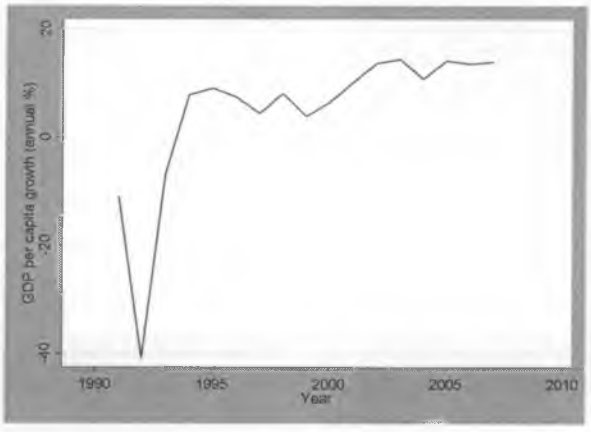
Autor(s)	Year	Topic	Data	Method(s)	Findings
Claeys, Hainz	2006	*Foreign Banks in Eastern Europe: Mode of Entry and Effects on Bank Interest Rates*	Yearly data of 200 banks in 10 Eastern European transition countries for the period of 1995-2003	Descriptive statistics and OLS regressions	Foreign bank entry results in decreased interest rates. However, foreign de novo banks tend to impose higher interest rates compared to foreign acquired banks
Clarke, Cull, Martinez Peria	2006	*Foreign Bank Participation and Access to Credit across Firms in Developing Countries*	Survey on firms in 35 developing and transition economies and macro-level data on these countries	Cross-country analysis	Foreign bank participation is likely to be influenced by the quality of the degree of supervision and regulation in the banking sector. In countries with higher level of foreign participation in the banking sector enterprises get easier access to financial services
Gersl, Rubene, Zumer,	2007	*Foreign Direct Investment and Productivity Spillovers: Updated Evidence from Central and Eastern Europe*	Firm-level data for CEE countries for the period 2000-2005 (Amadeus database)	Panel data analysis	In many cases spillovers appear to be negative, so foreign presence might have an adverse influence on the productivity level of local firms

APPENDIX II. Growth Dynamics in Transition Countries

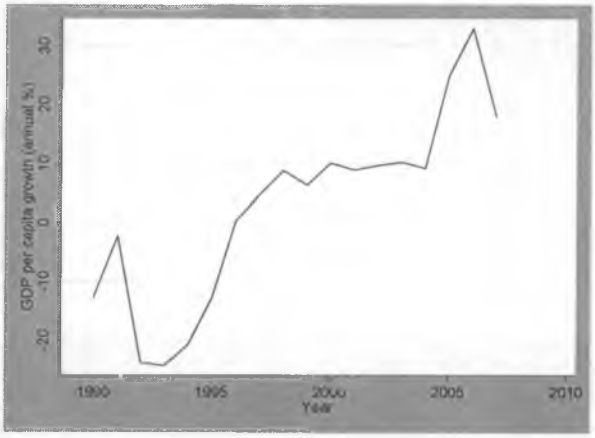
Albania



Armenia



Azerbaijan



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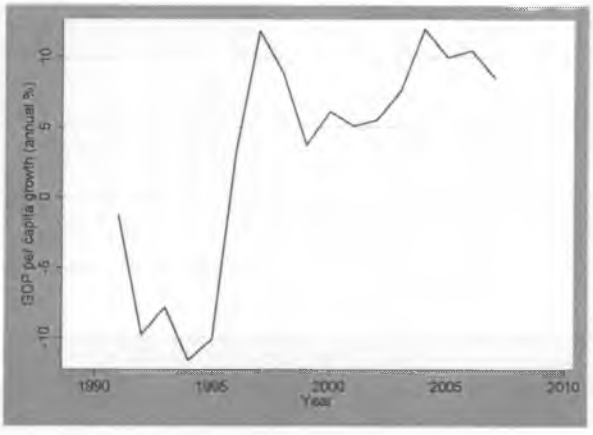
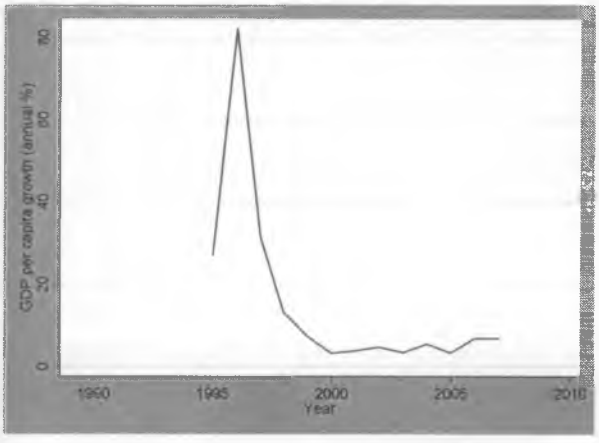
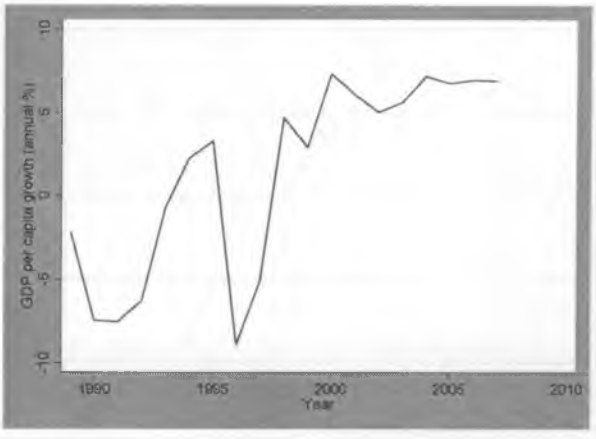


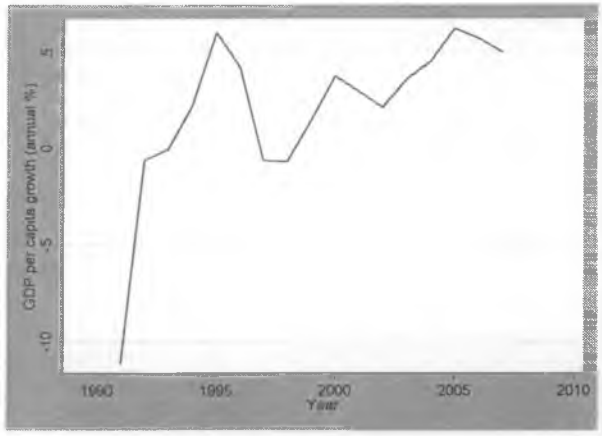
Bosnia and Herzegovina



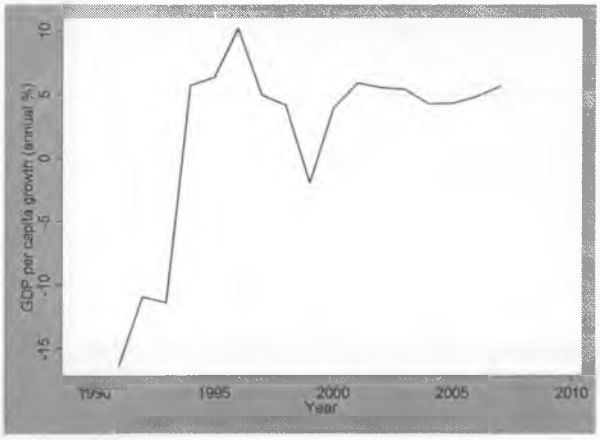
Bulgaria



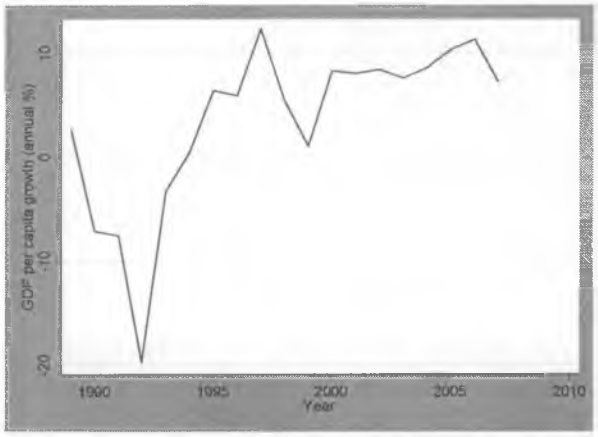
Czech Republic



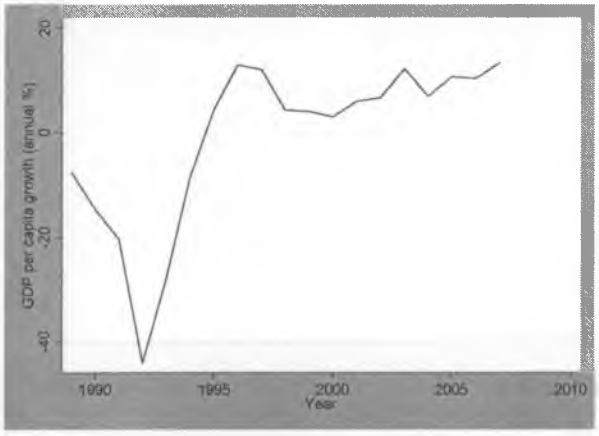
Croatia



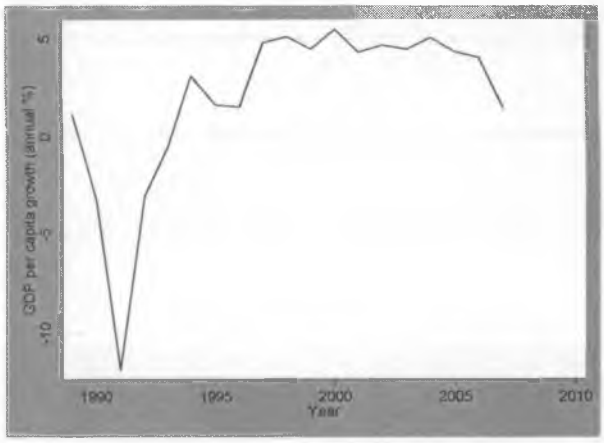
Estonia



Georgia



Hungary



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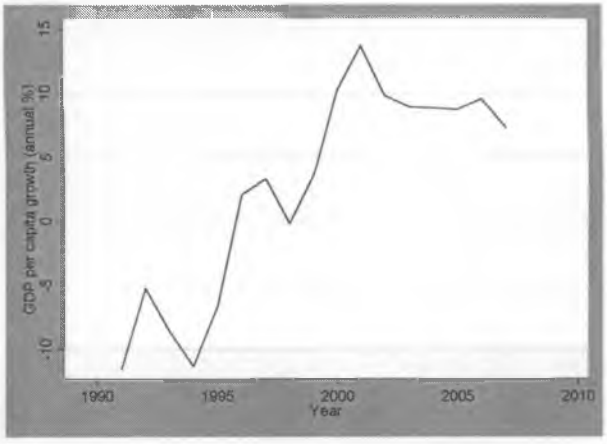

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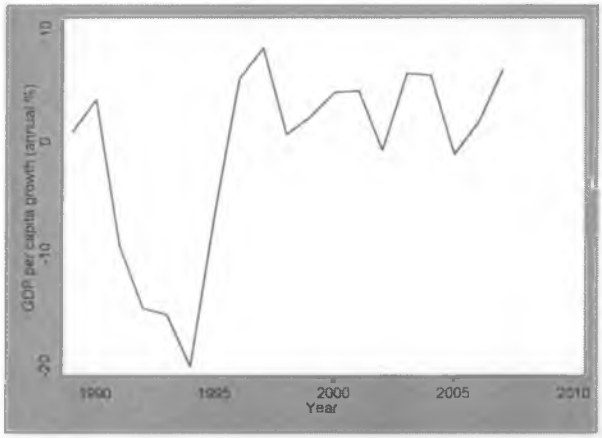
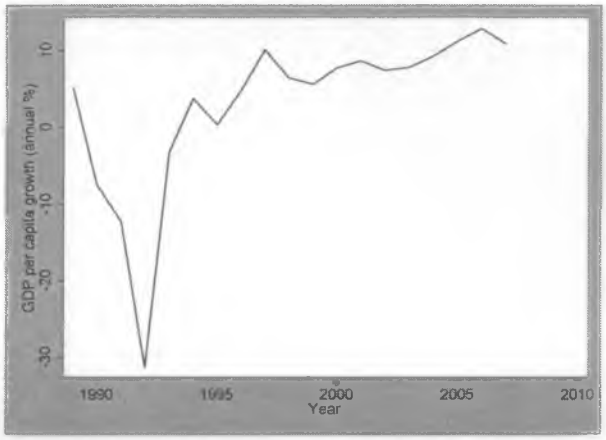
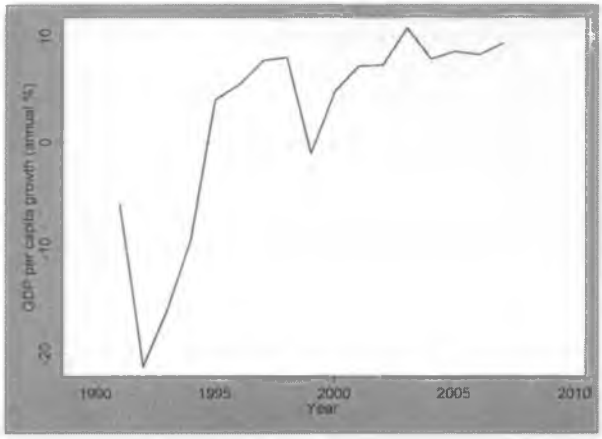


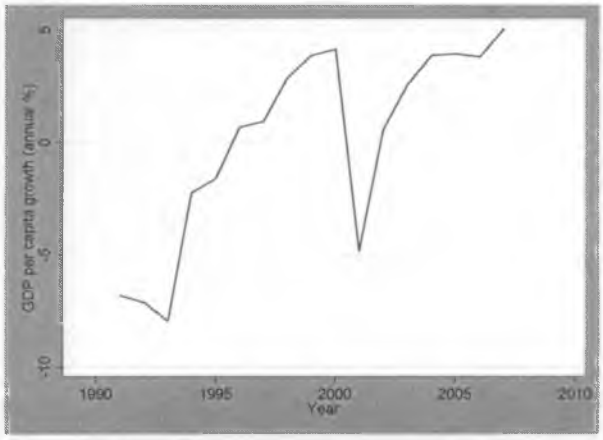
Latvia



Lithuania



Macedonia



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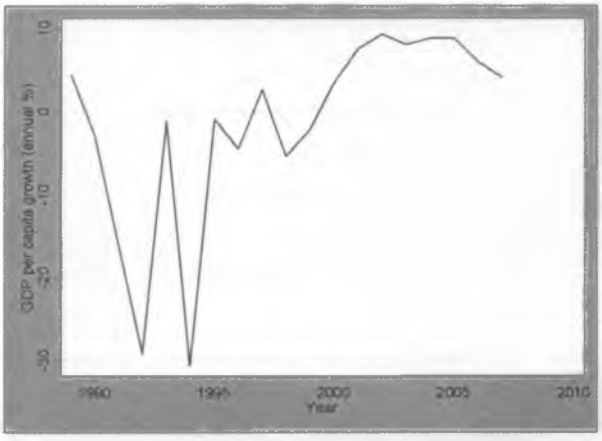
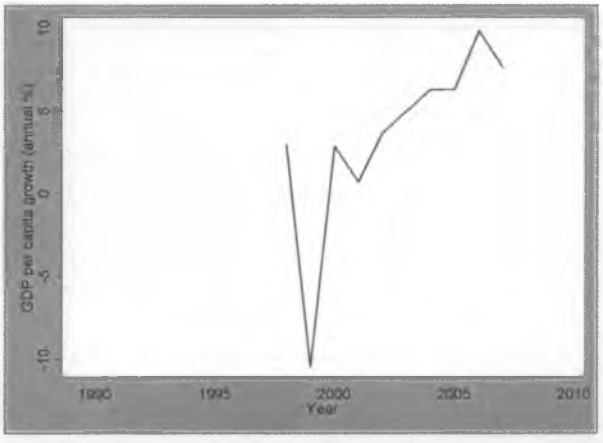
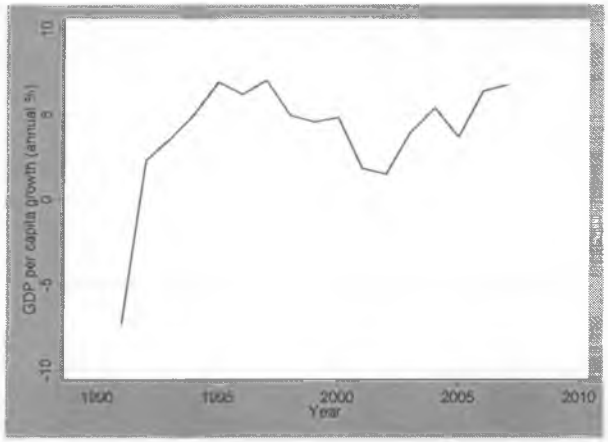


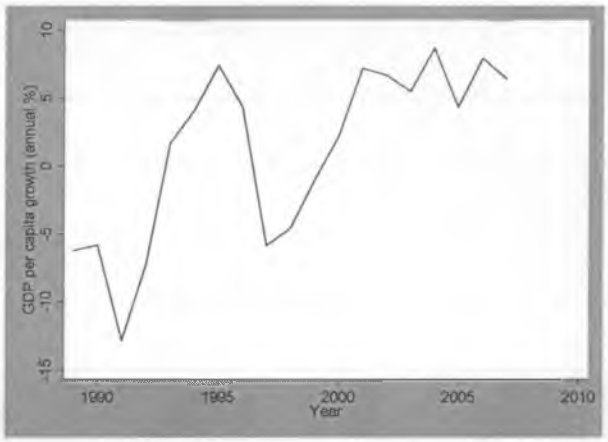
Montenegro



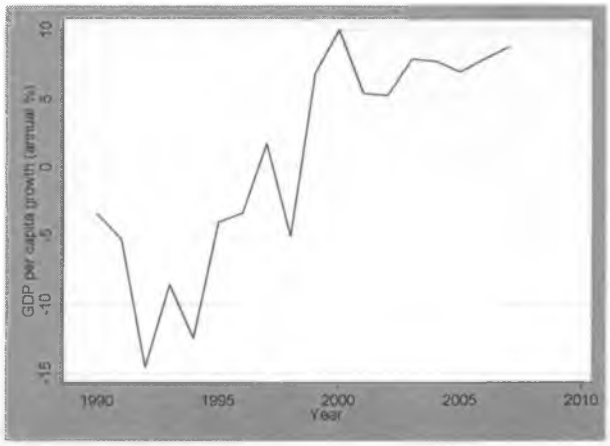
Poland



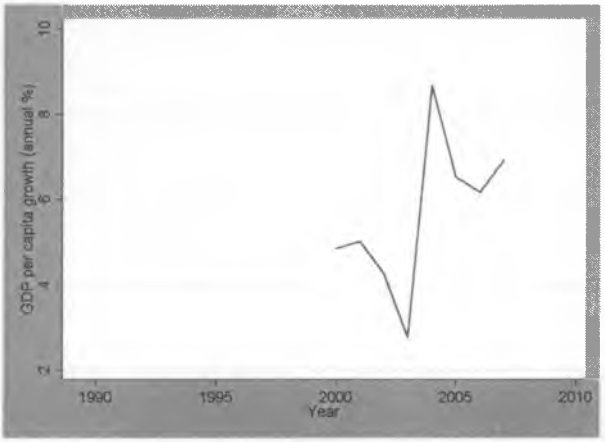
Romania



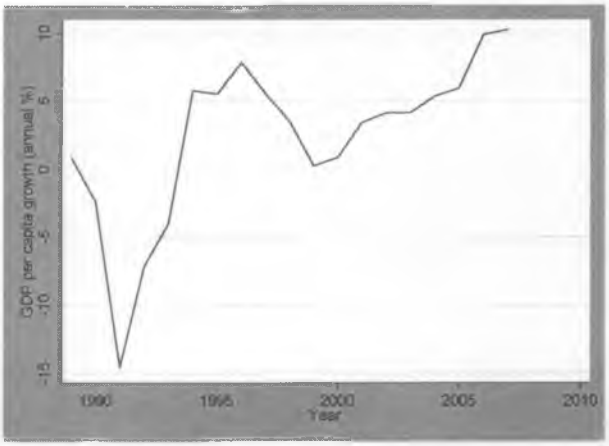
Russian Federation



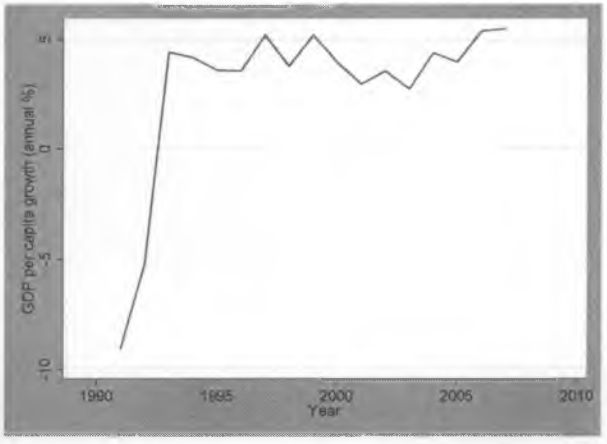
Serbia



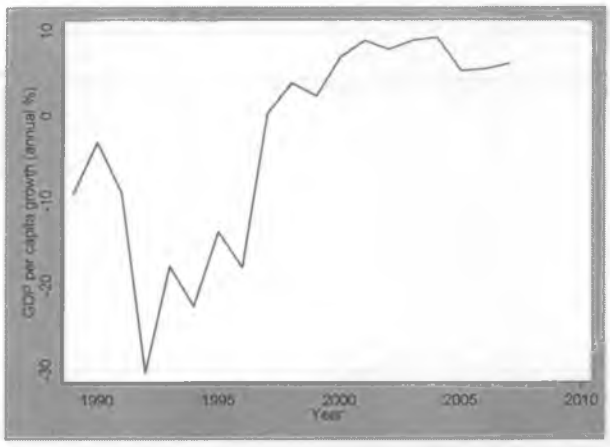
Slovak Republic



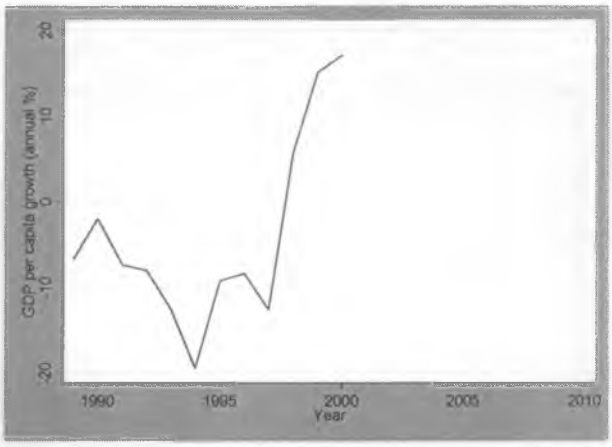
Slovenia



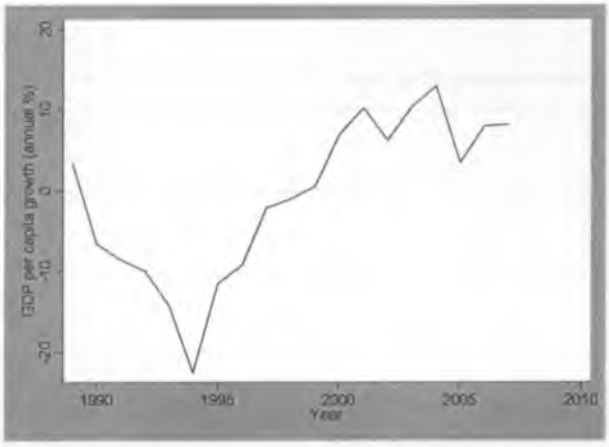
Tajikistan



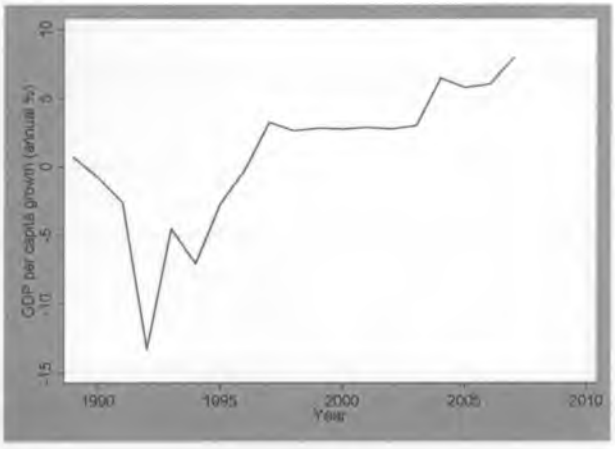
Turkmenistan



Ukraine

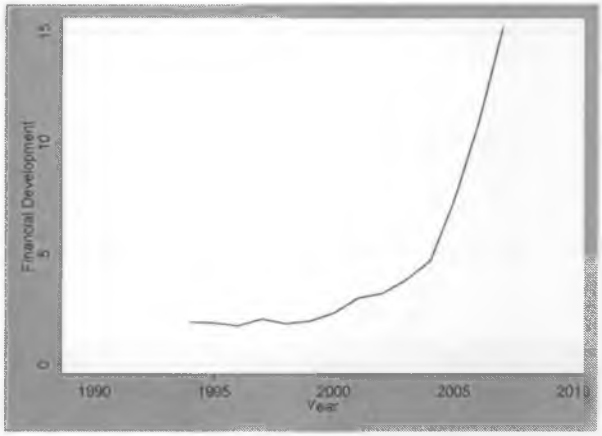


Uzbekistan

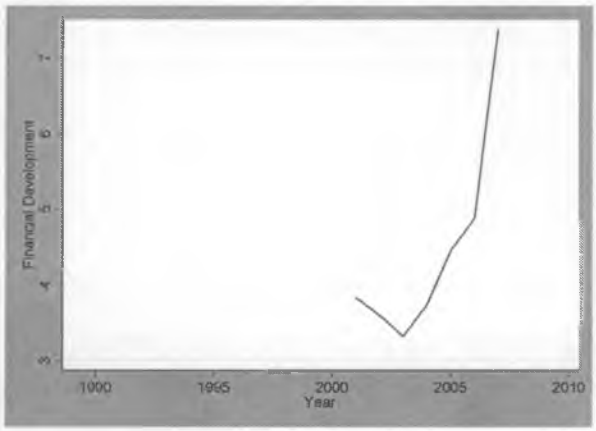


APPENDIX III. Financial Development in Transition Countries

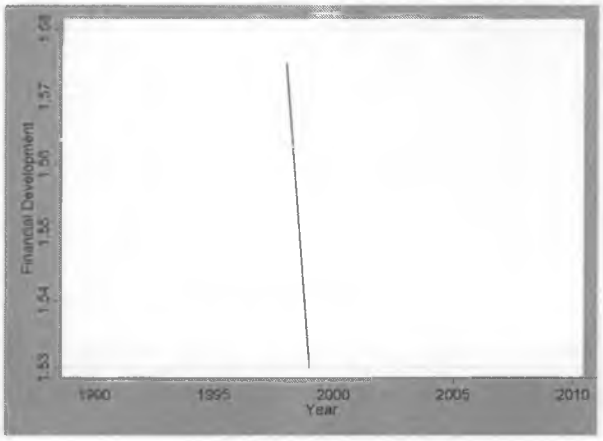
Albania



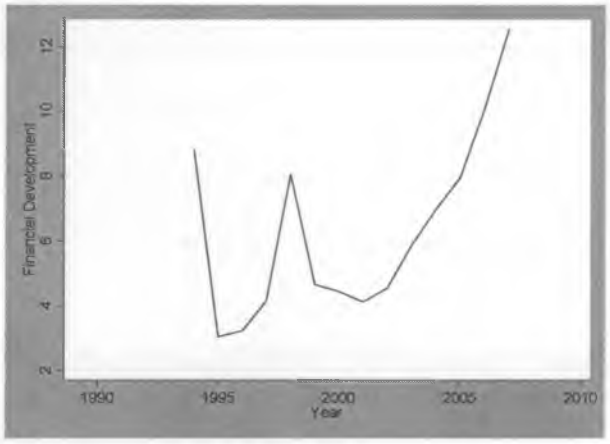
Armenia



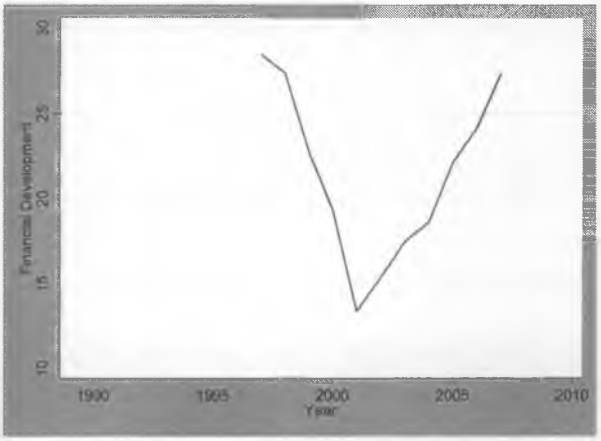
Azerbaijan



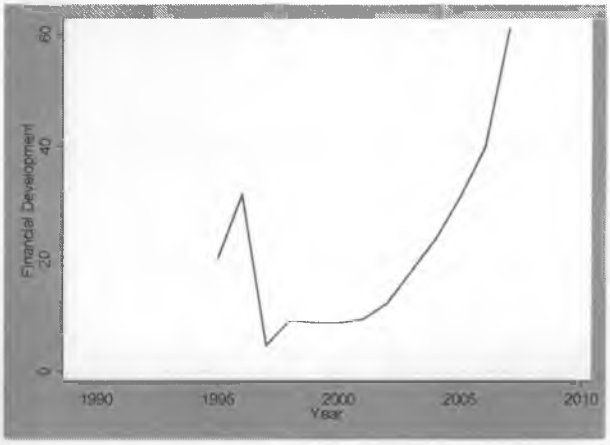
Belarus



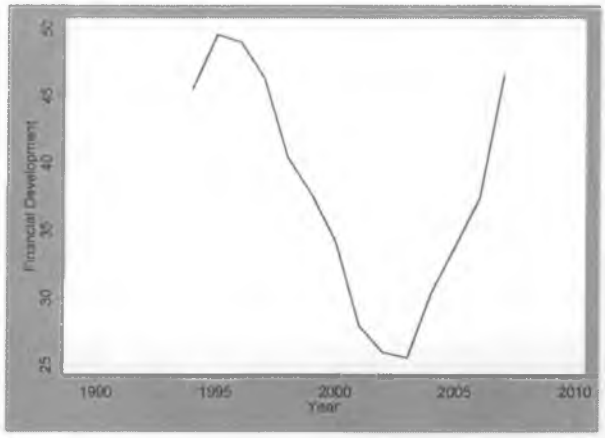
Bosnia and Herzegovina



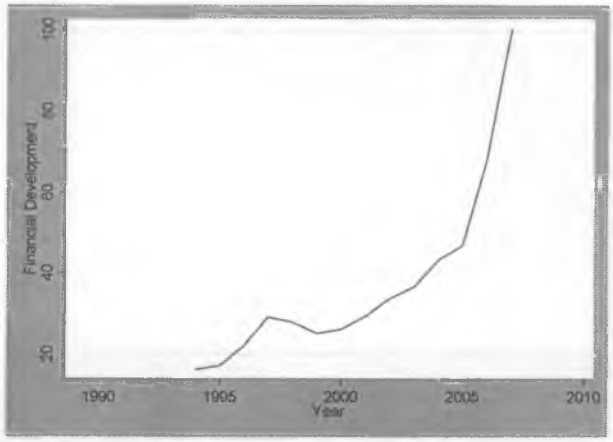
Bulgaria



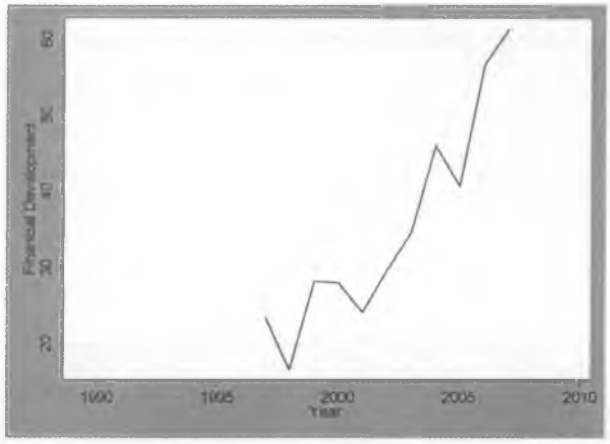
Czech Republic



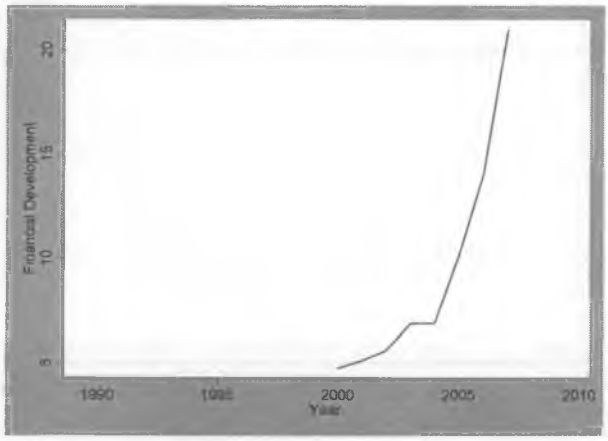
Croatia



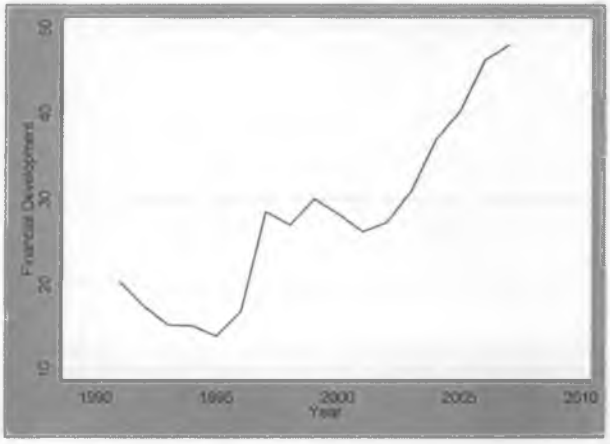
Estonia



Georgia



Hungary



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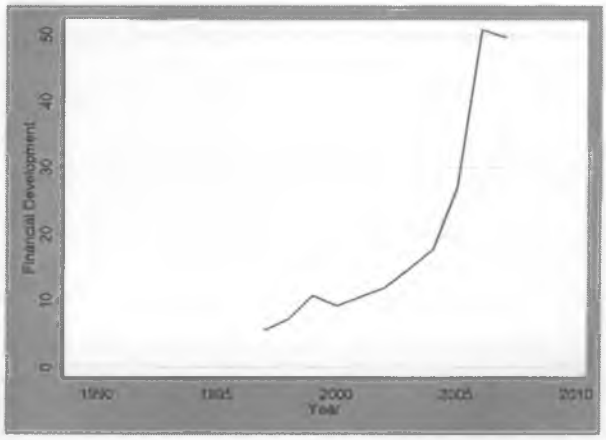
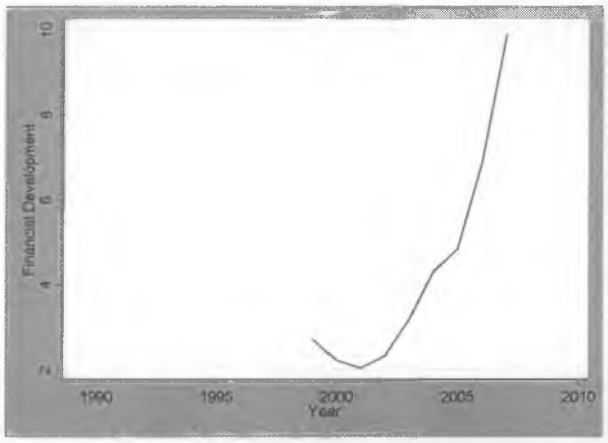
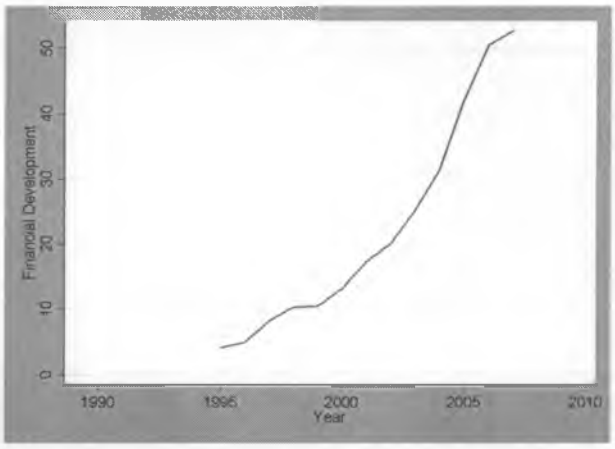


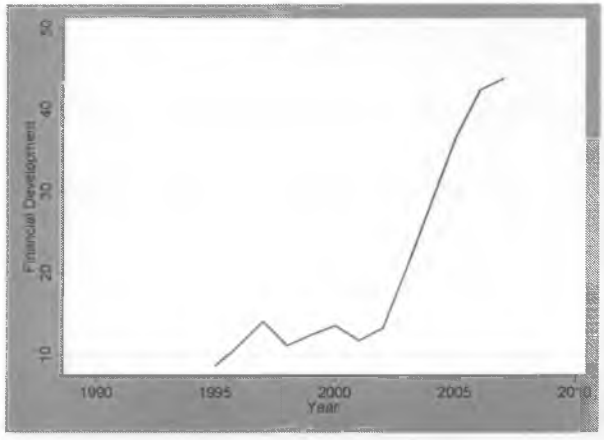
Kyrgyz Republic



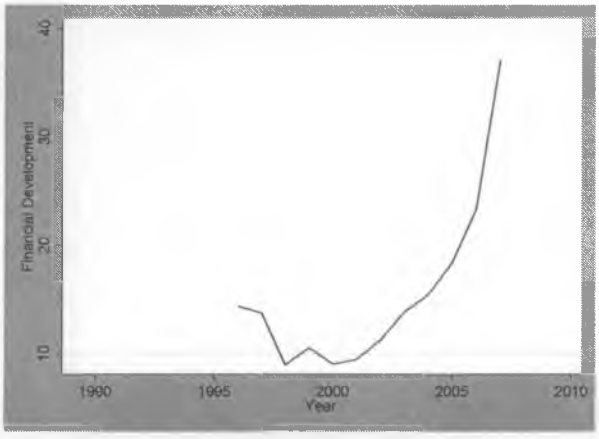
Latvia



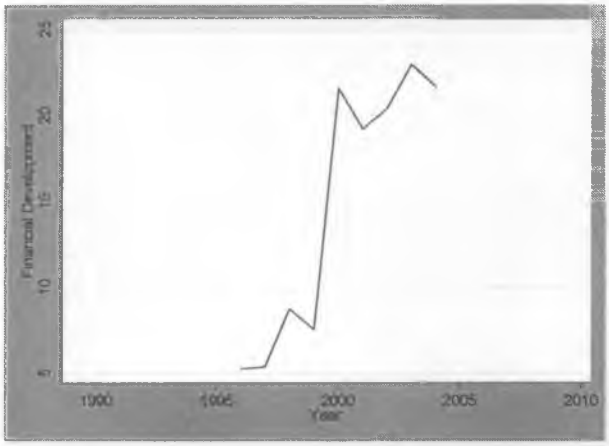
Lithuania



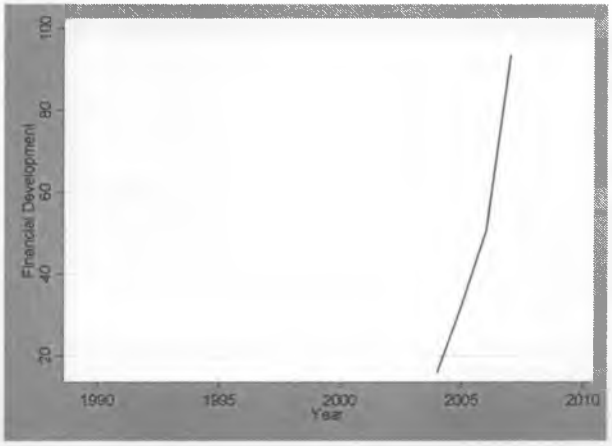
Macedonia



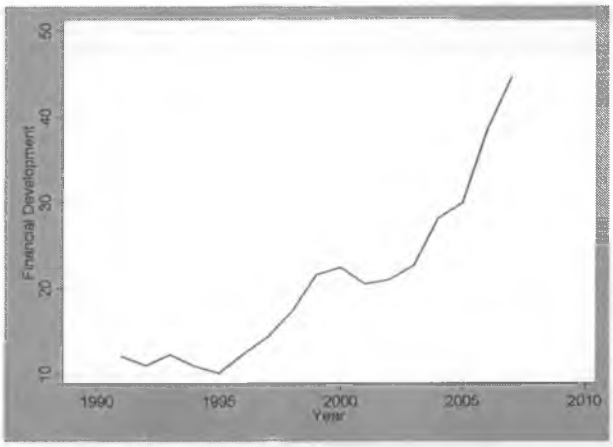
Moldova



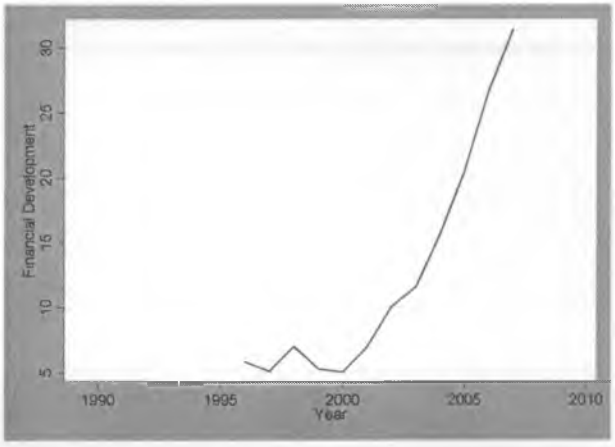
Montenegro



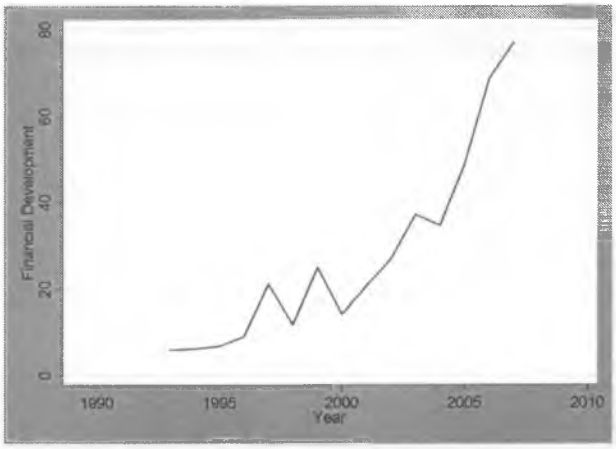
Poland



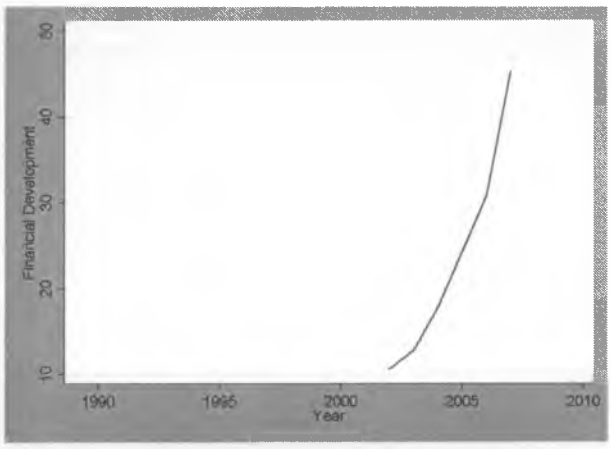
Romania



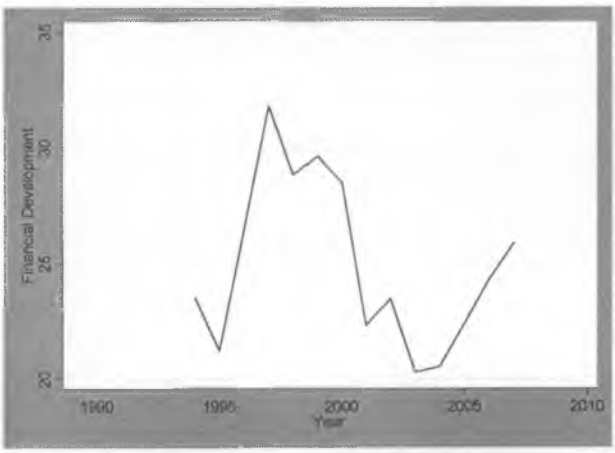
Russian Federation



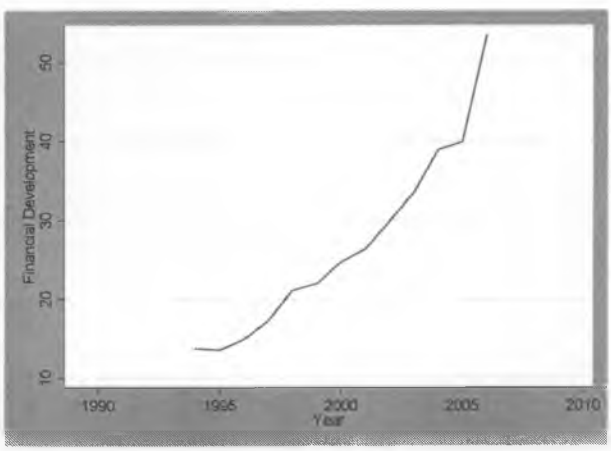
Serbia



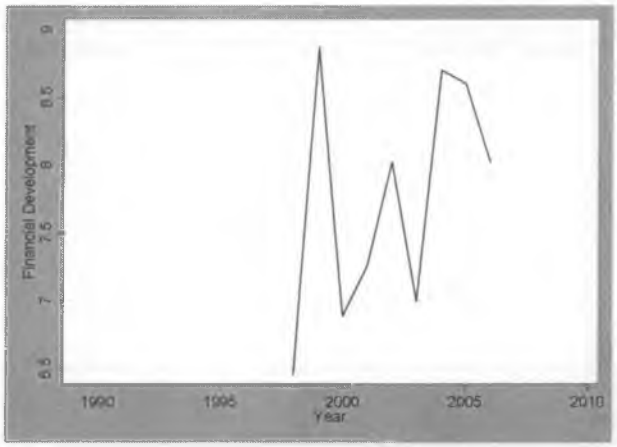
Slovak Republic



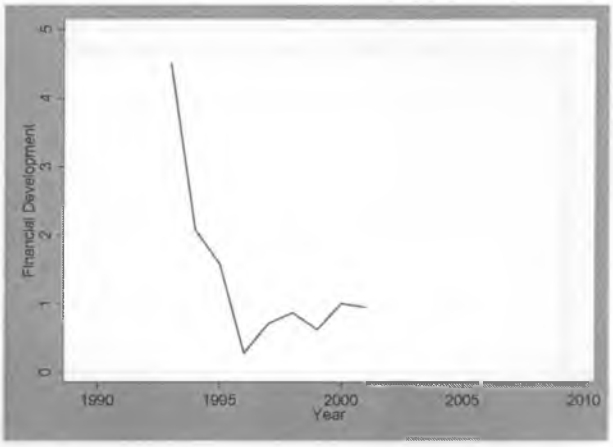
Slovenia



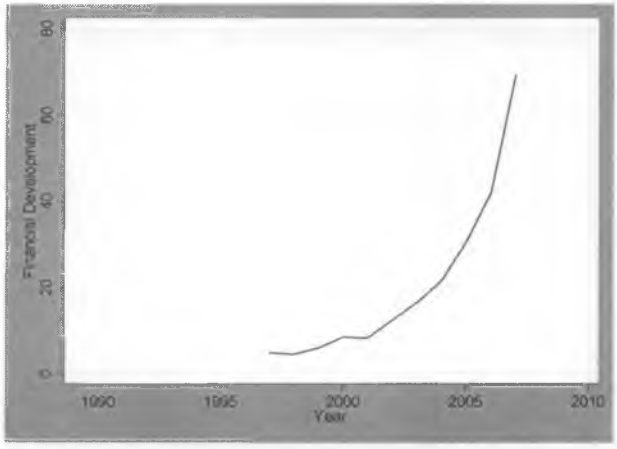
Tajikistan



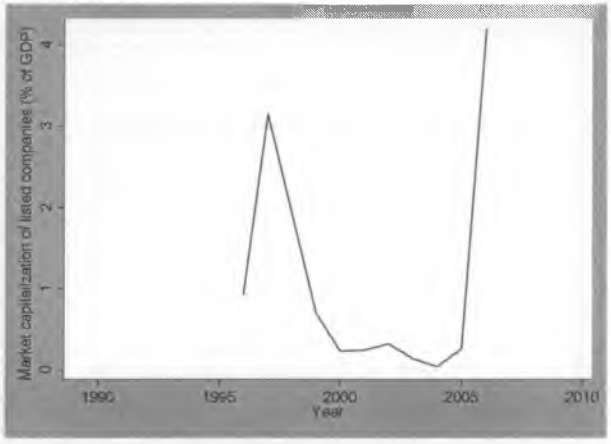
Turkmenistan



Ukraine



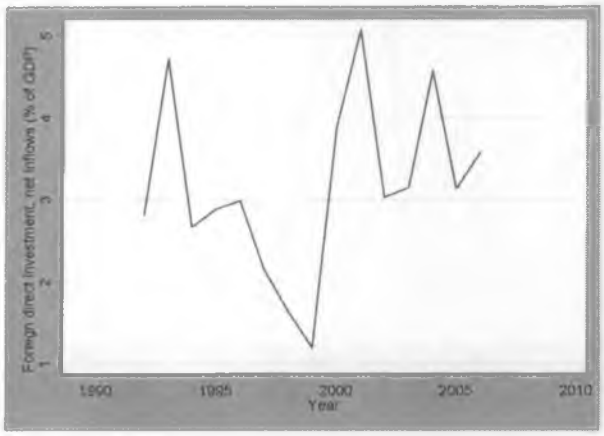
Uzbekistan[220]



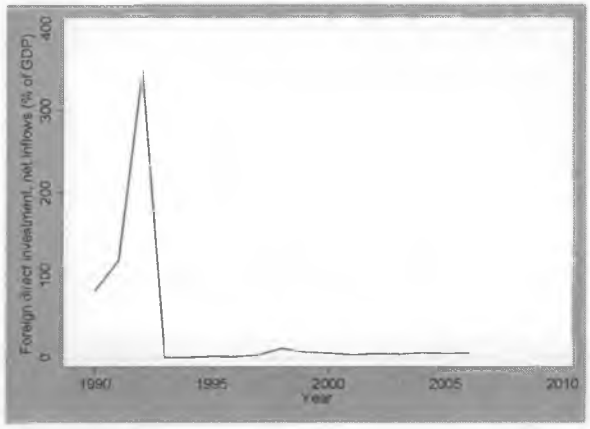
[220] No data available for banking development, the graph shows the dynamics of the development of stock markets

APPENDIX IV. FDI Inflows (% of GDP) in Transition Countries

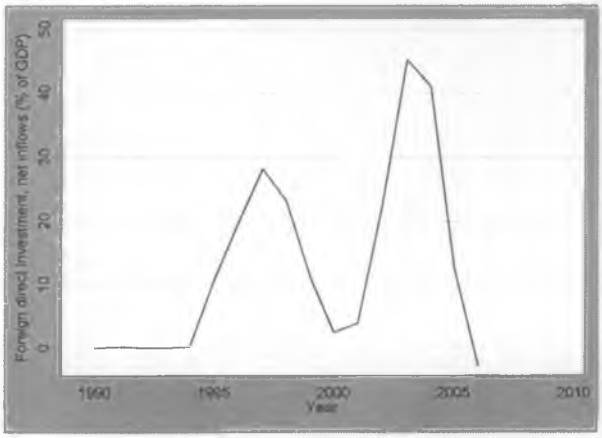
Albania



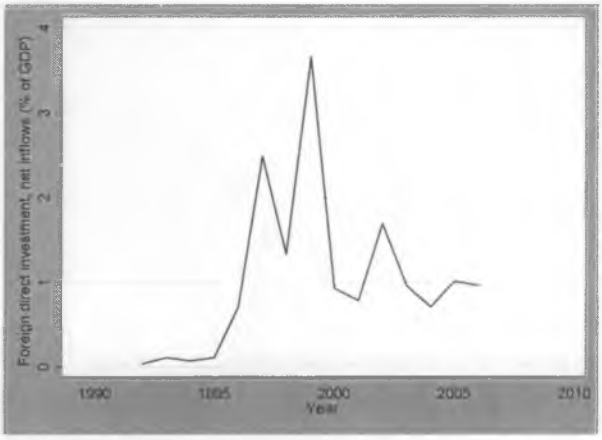
Armenia



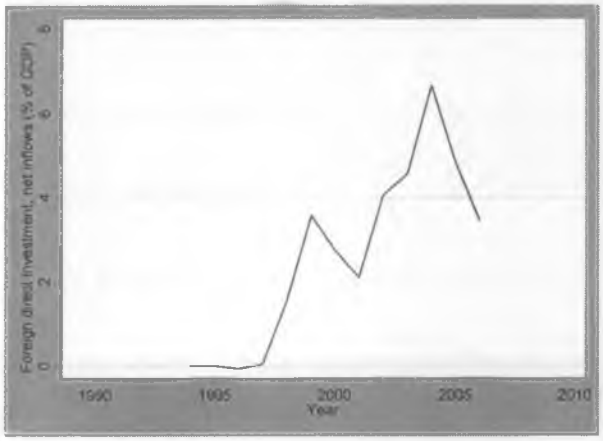
Azerbaijan



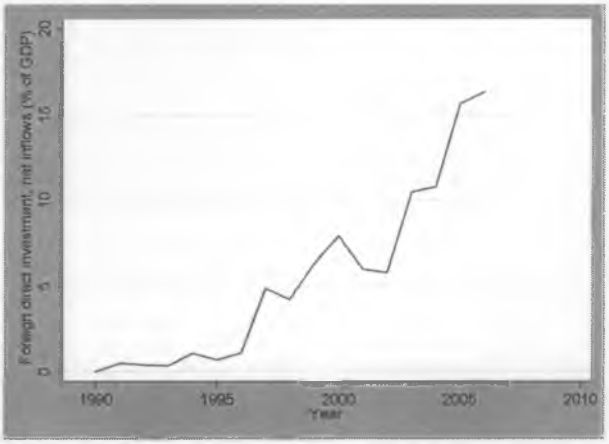
Belarus



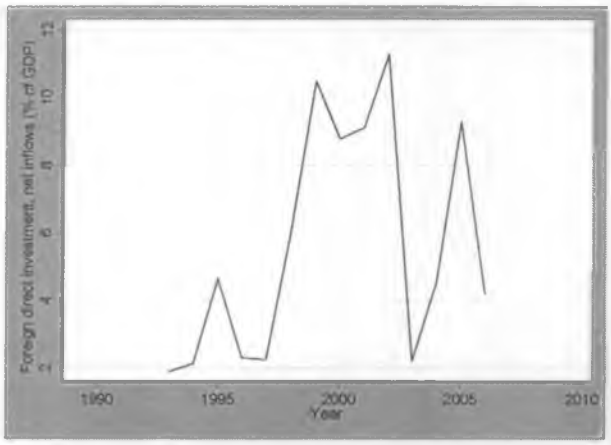
Bosnia and Herzegovina



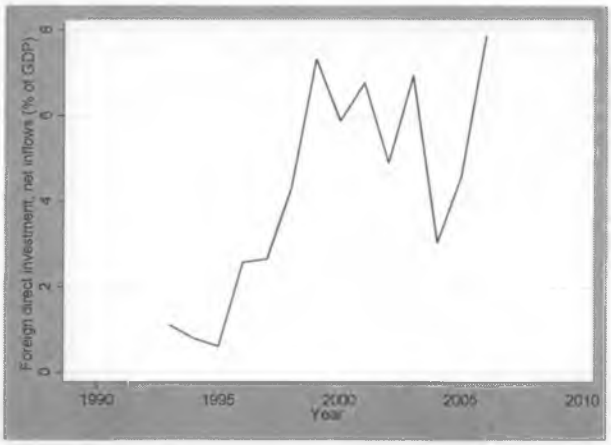
Bulgaria



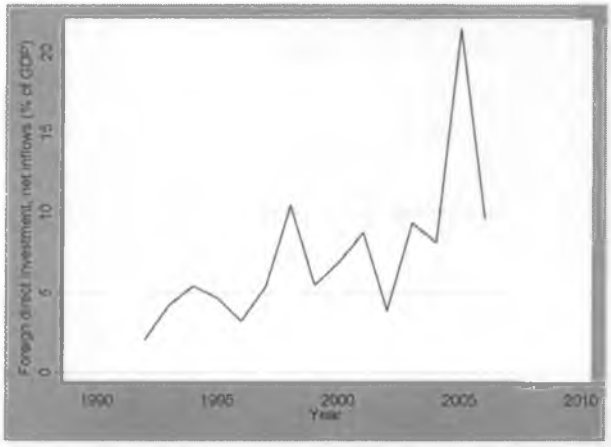
Czech Republic



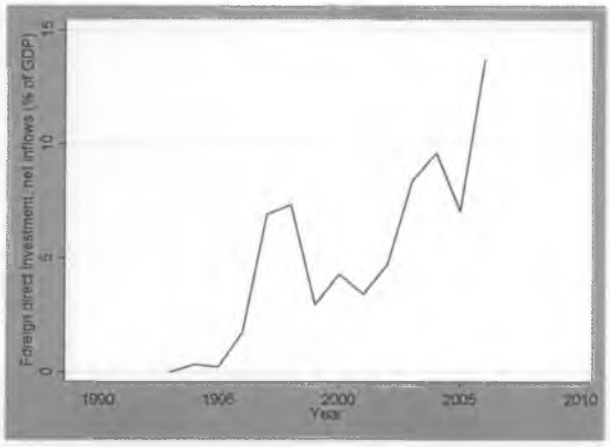
Croatia



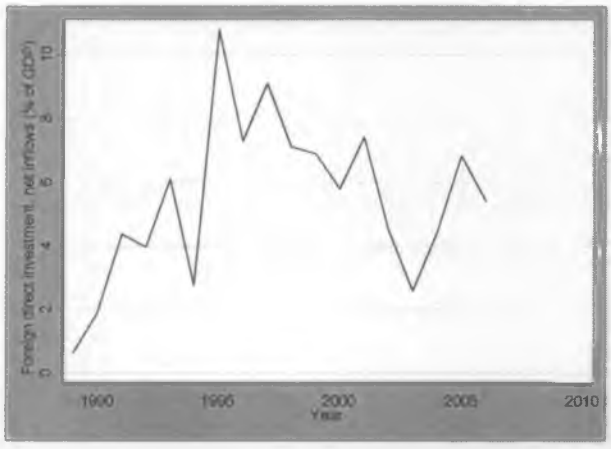
Estonia



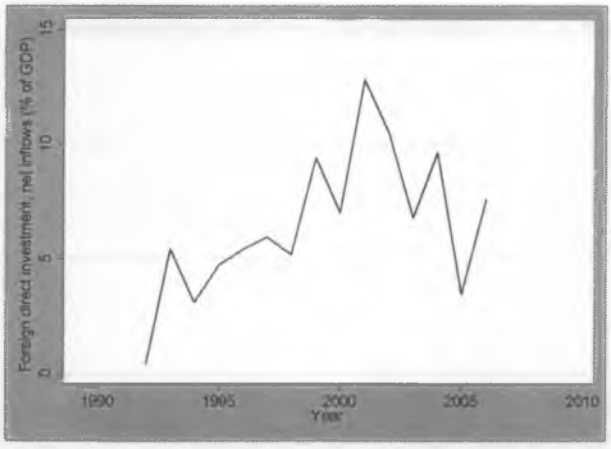
Georgia



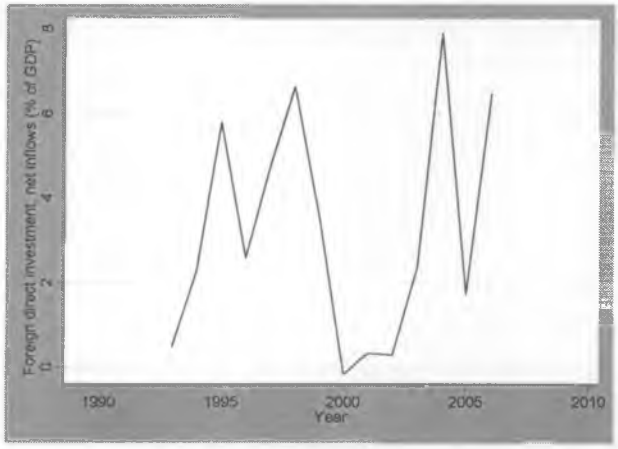
Hungary



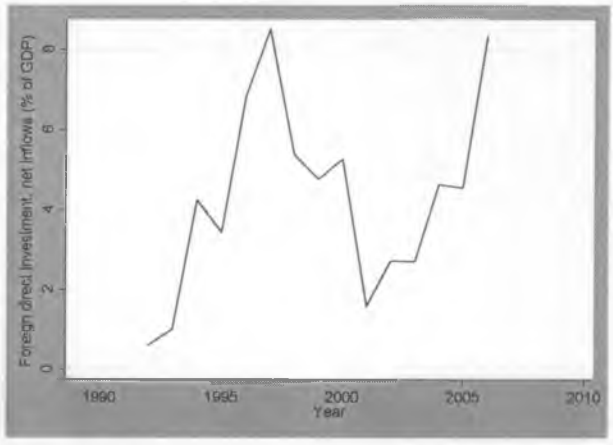
Kazakhstan



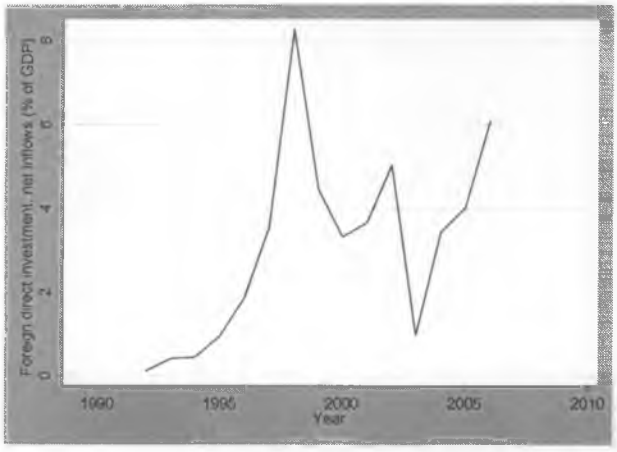
Kyrgyz Republic



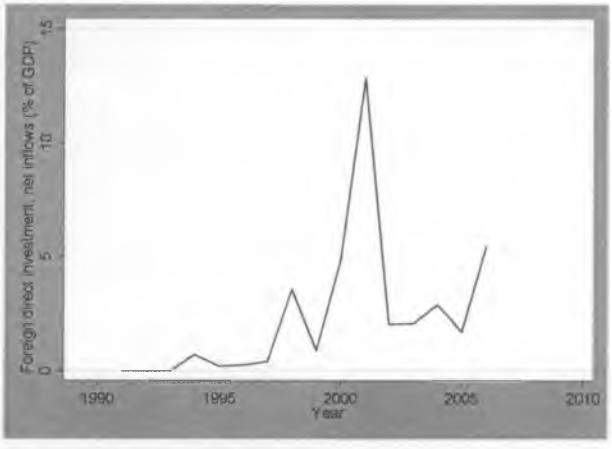
Latvia



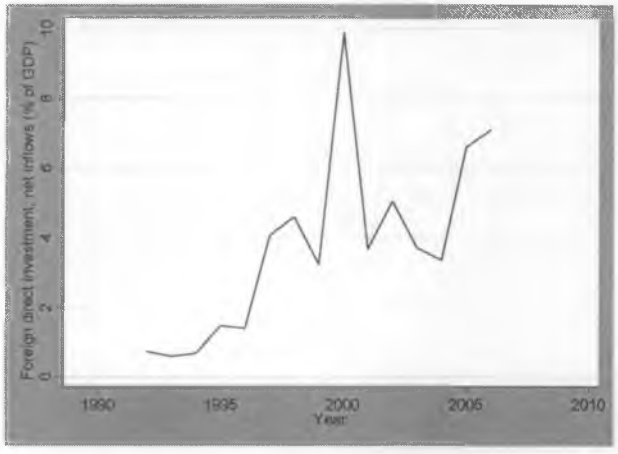
Lithuania



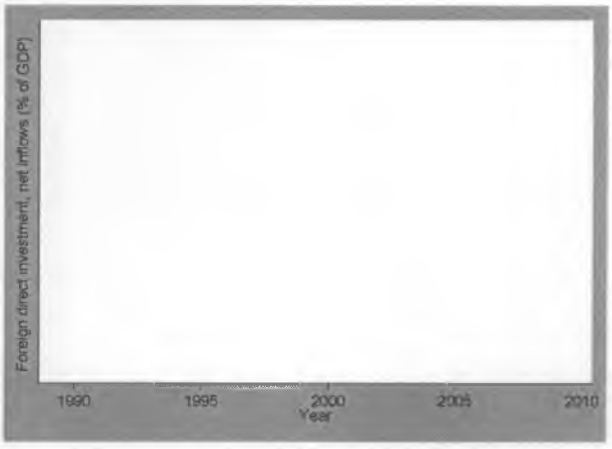
Macedonia



Moldova

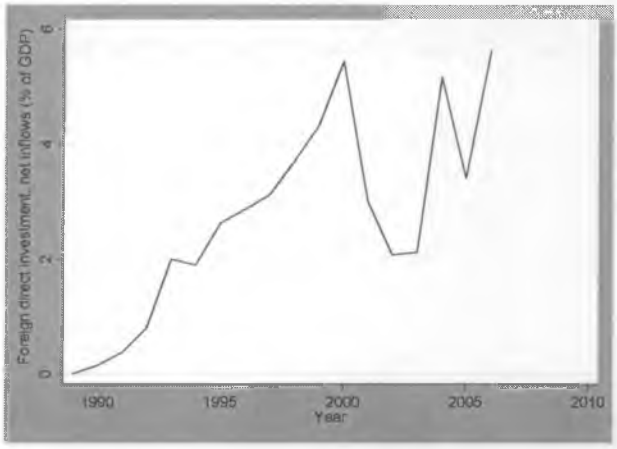


Montenegro[221]

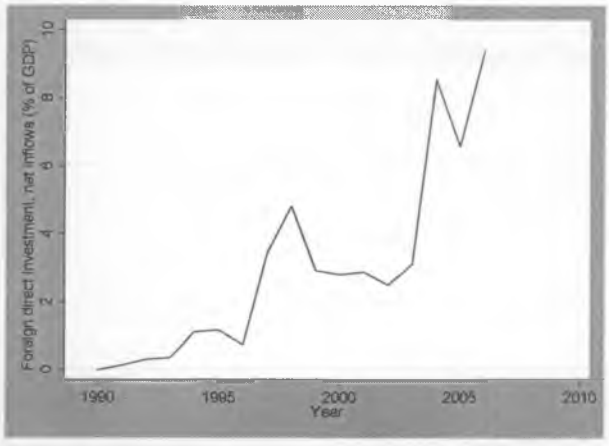


[221] No data on Montenegro available

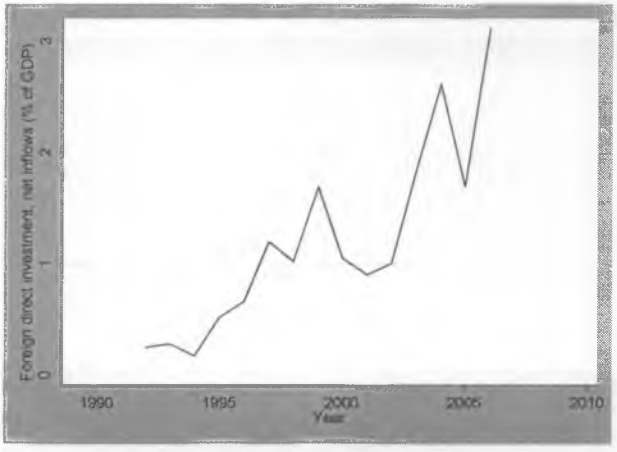
Poland



Romania

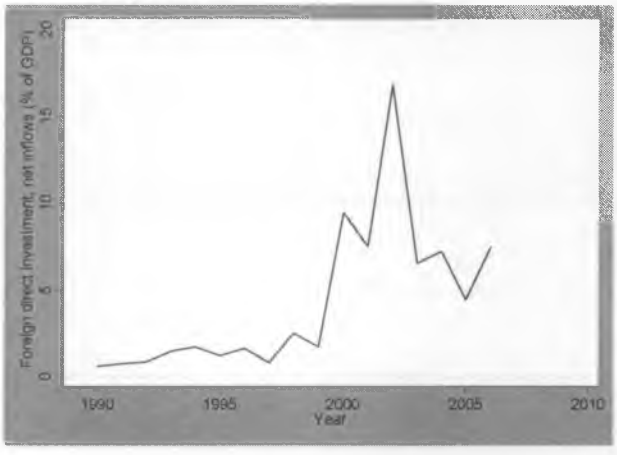


Russian Federation

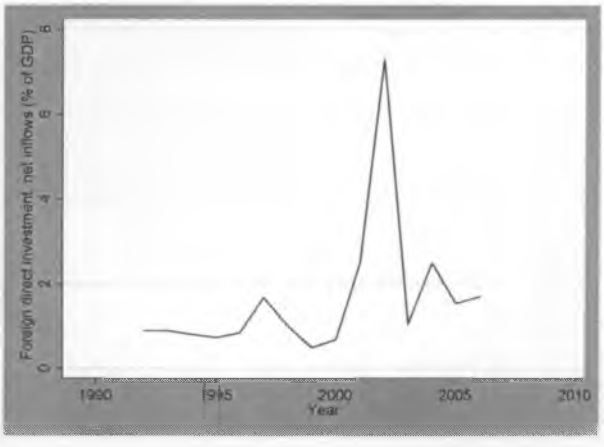


Serbia

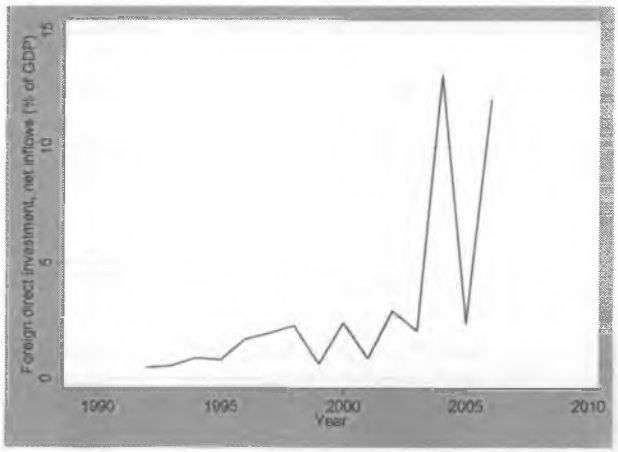
Slovak Republic



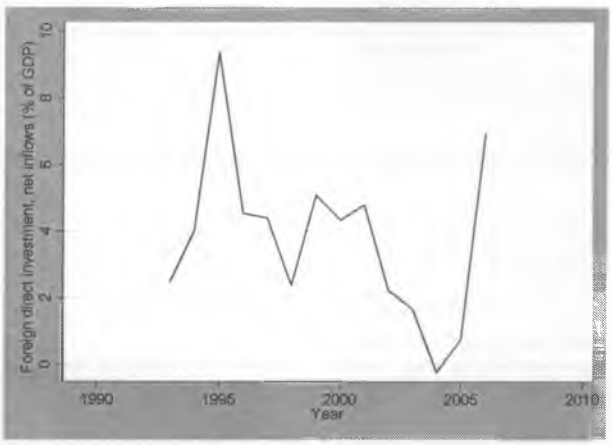
Slovenia



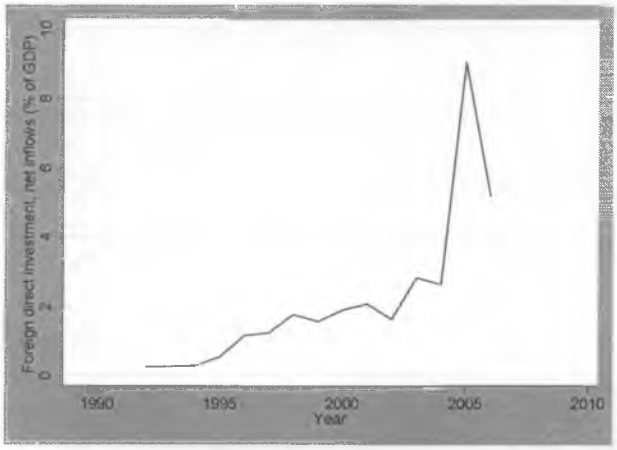
Tajikistan



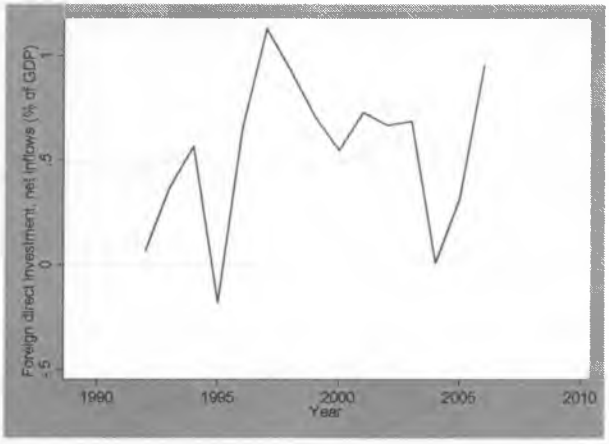
Turkmenistan



Ukraine



Uzbekistan



APPENDIX V. List of Variables

Name	Description	Source
bankreform	Banking reform and interest rate liberalisation	EBRD Transition Indicators
banksforinv	Firms using banks to finance investment (% of firms)	World Bank WDI
businessease	Ease of doing business index (1 = most business-friendly regulation)	World Bank WDI
compolicy	Competition policy	EBRD Transition Indicators
corcontrol	Control of Corruption	World Bank WGI
cpstogdp	Domestic credit to private sector (% of GDP)	World Bank WDI
creditinfo	Credit information availability index (0 = less information available to 6 = more information)	World Bank WDI
disindex	Business disclosure index (0 = less disclosure to 10 = more disclosure)	World Bank WDI
entrestruct	Enterprise restructuring	EBRD Transition Indicators
entryrate	Business entry rate (new registrations as % of total)	World Bank WDI
EU dummy	Dummy variable (1 = EU member, 0 = non-EU)	Constructed
fditogdp	Foreign direct investment, net inflows (% of GDP)	World Bank WDI
findev	Financial development (calculated as (cpstogdp + mcaptogdp)/2)	Constructed
finsector	CPIA financial sector rating (1 = low to 6 = high)	World Bank WDI
fiscpolicy	CPIA fiscal policy rating (1 = low to 6 = high)	World Bank WDI
gdppcgrowth	GDP per capita growth (annual %)	World Bank WDI
goveffect	Government Efectiveness	World Bank WGI
infrareform	Overall infrastructure reform	EBRD Transition Indicators
lscalepriv	Large-scale privatisation	EBRD Transition Indicators
mcaptogdp	Market capitalisation of listed companies (% of GDP)	World Bank WDI
newbusiness	New business registered (number)	World Bank WDI
nonbankinst	Securities markets and non-bank financial institutions	EBRD Transition Indicators
openness	Trade openness ratio (calculated as (imports + exports)/ GDP)	Constructed
patentsr	Patent applications, residents	World Bank WDI

Name	Description	Source
polstability	Political Stability No Violence	World Bank WGI
pqli	Physical Quality of Life Index (calculated as (enrolment in tertiary education + weighted mortality rate + weighted life expectancy)/ 3)	Constructed
pricelib	Price liberalisation	EBRD Transition Indicators
proprights	CPIA property rights and rule-based governance rating (1 = low to 6 = high)	World Bank WDI
pubadmin	CPIA quality of public administration rating (1 = low to 6 = high)	World Bank WDI
pubeduspend	Public spending on education (% of GDP)	World Bank WDI
regenviron	CPIA business regulatory environment rating (1 = low to 6 = high)	World Bank WDI
rndexp	Research and Development Expenditure (% of GDP)	World Bank WDI
ruleoflaw	Rule of Law	World Bank WGI
socprotect	CPIA social protection rating (1 = low to 6 = high)	World Bank WDI
sscalepriv	Small-scale privatisation	EBRD Transition Indicators
startupcost	Cost of business start-up procedures (% of GNI per capita)	World Bank WDI
startupproc	Start-up procedures to register a business (number)	World Bank WDI
stoturnover	Stocks traded, turnover ratio (%)	World Bank WDI
tadesystem	Trade and Forex system	EBRD Transition Indicators

APPENDIX VI. Summary Statistics

Variable		*Mean*	*Std. Dev.*	*Min*	*Max*	*Observations*
Banking reform and interest rate liberalisation	overall	2.562393	0.820386	1	4	N = 351
	between		0.745345	1	3.846154	n = 27
	within		0.369514	1.434701	3.540086	T = 13
Firms using banks to finance investment	overall	14.30333	10.38504	0.57	60	N = 60
	between		7.658611	1.635	36.48333	n = 26
	within		6.7215	-2.39	37.82	T-bar = 2.30769
Ease of doing business index	overall	78.01299	38.45041	15	153	N = 77
	between		37.95755	17	145.3333	n = 26
	within		10.55811	40.34632	134.3463	T-bar = 2.96154
Competition policy	overall	2.134615	0.633265	1	3.67	N = 351
	between		0.568353	1	3.101538	n = 27
	within		0.298455	0.906154	3.009231	T = 13
Control of corruption	overall	-0.38169	0.640407	-1.75	1.05	N = 243
	between		0.623351	-1.22778	0.898889	n = 27
	within		0.18547	-1.14613	0.333868	T = 9
Domestic credit to private sector	overall	24.39137	18.42861	0.56	94.37	N = 322
	between		13.87173	1.718571	49.16923	n = 26
	within		12.58794	-5.0171	82.02752	T-bar = 12.3846
Credit information availability index	overall	3.192308	1.970751	0	6	N = 52
	between		1.897772	0	6	n = 26
	within		0.594089	1.192308	5.192308	T = 2
Business disclosure index	overall	4.679487	2.746869	0	10	N = 78
	between		2.742293	0	10	n = 26
	within		0.690066	1.679487	7.346154	T-bar = 3
Enterprise restructuring	overall	2.258575	0.683581	1	3.67	N = 351
	between		0.646862	1.103077	3.332308	n = 27
	within		0.251392	1.335499	3.050883	T = 13
Business entry rate	overall	7.504267	2.417802	3.28	14.54	N = 75
	between		2.272227	3.9625	11.855	n = 20
	within		1.12972	3.704267	12.49427	T = 3.75
Membership in the EU	overall	0.096866	0.296198	0	1	N = 351
	between		0.140861	0	0.307692	n = 27
	within		0.261862	-0.21083	1.019943	T = 13
Non-membership in the EU	overall	0.903134	0.296198	0	1	N = 351
	between		0.140861	0.692308	1	n = 27
	within		0.261862	-0.01994	1.210826	T = 13
FDI inflows	overall	4.737205	5.072763	-2.78	45.15	N = 322
	between		3.291231	0.5975	18.135	n = 27
	within		3.899668	-16.1778	31.75221	T = 11.9259

Variable		*Mean*	*Std. Dev.*	*Min*	*Max*	*Observations*
Finacial Development	overall	20.1257	15.82189	0.28	100.37	N = 280
	between		11.29287	0.859286	38.95192	n = 26
	within		11.67193	-4.05777	81.54377	T-bar = 10.7692
Financial sector rating	overall	3.339286	0.452433	2.5	4	N = 28
	between		0.474342	2.5	4	n = 10
	within		0	3.339286	3.339286	T = 2.8
Fiscal policy rating	overall	4	0.527046	3.5	5	N = 28
	between		0.499691	3.5	5	n = 10
	within		0.19245	3.5	4.5	T = 2.8
GDP per capita growth	overall	5.548732	6.984309	-17.88	82.11	N = 339
	between		3.027478	1.261667	15.39462	n = 27
	within		6.323637	-17.4497	72.26412	T-bar = 12.5556
Government effectiveness	overall	-0.20436	0.743916	-1.62	1.22	N = 243
	between		0.727261	-1.42444	0.983333	n = 27
	within		0.204905	-1.17658	0.372305	T = 9
Overall infrastructure reform	overall	2.164786	0.736754	1	3.67	N = 351
	between		0.637828	1	3.489231	n = 27
	within		0.387209	0.524017	2.854017	T = 13
Large-scale privatisation	overall	2.89547	0.852156	1	4	N = 351
	between		0.785087	1.051538	4	n = 27
	within		0.361857	1.53547	3.898547	T = 13
Small-scale privatisation	overall	3.666809	0.7276	1	4.33	N = 351
	between		0.672061	1.949231	4.304615	n = 27
	within		0.305323	1.486809	4.409886	T = 13
Market capitalisation of listed companies	overall	13.15053	18.00712	0	128.67	N = 304
	between		11.86234	0	43.00615	n = 27
	within		13.59966	-25.8456	111.3051	T-bar = 11.2593
New business registered	overall	32293.68	83912.21	821	446605	N = 75
	between		82101.85	1395.5	372576.8	n = 20
	within		11927.66	-28944.1	106321.9	T = 3.75
Securities markets and non-bank financial institutions	overall	2.147721	0.741196	1	4	N = 351
	between		0.684855	1	3.564615	n = 27
	within		0.310527	0.792336	2.810028	T = 13
Trade openness ratio	overall	0.99761	0.286985	0.444459	1.733656	N = 290
	between		0.263181	0.5679	1.539958	n = 25
	within		0.130825	0.599828	1.54498	T-bar = 11.6
Patent applications by residents	overall	1606.558	4492.533	0	27833	N = 278
	between		4174.148	0.333333	21518.75	n = 27
	within		924.8266	-4806.19	7920.808	T = 10.2963
Political stability no violence	overall	-0.13152	0.815591	-2.59	1.28	N = 243
	between		0.773133	-1.61	1.063333	n = 27
	within		0.295322	-1.11152	1.217366	T = 9

Variable		*Mean*	*Std. Dev.*	*Min*	*Max*	*Observations*
Physical quality of life index	overall	73.61574	9.367439	44.50009	93.68691	N = 123
	between		9.900566	48.52102	87.39807	n = 24
	within		3.355191	64.26444	81.87649	T = 5.125
Price liberalisation	overall	3.905356	0.552319	1	4.33	N = 351
	between		0.470645	2.67	4.33	n = 27
	within		0.3019	1.289971	5.03151	T = 13
Property rights and rule-based governance rating	overall	2.946429	0.478022	2	3.5	N = 28
	between		0.468202	2.166667	3.5	n = 10
	within		0.103935	2.696429	3.279762	T = 2.8
Quality of public administration rating	overall	3.053571	0.497015	2.5	4	N = 28
	between		0.479197	2.5	4	n = 10
	within		0.157135	2.553571	3.553571	T = 2.8
Public spending on education	overall	4.290329	1.26345	2.07	7.62	N = 152
	between		1.15706	2.374444	6	n = 23
	within		0.521116	2.84144	6.101579	T = 6.6087
Business regulatory environment rating	overall	3.571429	0.539449	2.5	5	N = 28
	between		0.497215	2.666667	4.5	n = 10
	within		0.235702	3.071429	4.071429	T = 2.8
Research and development expenditure	overall	2.017742	6.478971	0.07	44.06	N = 217
	between		6.557049	0.08	32.08333	n = 23
	within		1.584528	-7.55559	13.99441	T = 9.43478
Rule of law	overall	-0.35284	0.718734	-1.75	1.07	N = 243
	between		0.711878	-1.30333	0.9	n = 27
	within		0.162974	-0.87062	0.367161	T = 9
Social protection rating	overall	3.672414	0.360453	3	4.5	N = 29
	between		0.323942	3.5	4.5	n = 10
	within		0.172516	3.172414	4.172414	T = 2.9
Cost of business start-up procedures	overall	14.27143	11.33925	2	75.1	N = 126
	between		12.18038	3.36	57.35	n = 26
	within		4.952288	-3.47857	38.47143	T-bar = 4.84615
Start-up procedures to register a business	overall	9.539683	2.773159	5	16	N = 126
	between		2.663775	5	14.8	n = 26
	within		1.040192	4.739683	12.73968	T-bar = 4.84615
Stocks traded, turnover ratio	overall	36.57557	44.31108	0	348.3	N = 194
	between		28.35224	5.745455	99.77333	n = 21
	within		36.54629	-57.2778	322.8013	T-bar = 9.2381
Trade an FOREX system	overall	3.600541	1.015794	1	4.33	N = 351
	between		0.945643	1	4.33	n = 27
	within		0.410191	1.628234	4.802849	T = 13

APPENDIX VII. Empirical Models and Results

Independent Variable	*OLS (1)*	*RE*	*FE*	*OLS (2)*	*LSDV*	*GMM (1)*	*GMM (2)*		*3SLS*
Estimation period 1989-2007					*GDP per capita growth*				*FDI inflows (%of GDP)*
GDP per capita growth $_{(t-1)}$					**0.8328***	**-0.3690***	**-0.1411***	**0.6586***	
					(0.2284)	(0.1150)	(0.0814)	(0.1832)	
FDI inflows as a proportion of GDP	**0.8965****	**0.1102**	**0.8965****	**1.3245***	**1.0013****	**0.0085**	**1.3609*****	**-0.1832**	
	(0.3509)	(0.4797)	(0.3511)	(0.5221)	(0.4603)	(0.1322)	(0.0479)	(0.4598)	
Financial Development	**0.1436**	**0.0100**	**0.1436**	**0.3041**	**0.0530**	**-0.0173**	**0.2323*****	**-0.0708**	**0.0991**
	(0.0822)	(0.1438)	(0.0822)	(0.2152)	(0.1107)	(0.0444)	(0.0288)	(0.0835)	(0.0908)
FDI * Financial Development	**-0.0218***	**0.0033**	**-0.0218***	**-0.0326**	**-0.0178**	**-0.0003**	**-0.0351*****	**0.0044**	
	(0.0101)	(0.0133)	(0.0101)	(0.0141)	(0.0120)	(0.0033)	(0.0010)	(0.0129)	
EU dummy	**-1.6714**	**2.0734**	**-1.6714**	**0.4767**	**1.0337**	**1.2715*****	**-2.2490****	**2.1263*****	
	(1.1833)	(1.6657)	(1.1833)	(4.2274)	(2.3677)	(0.4838)	(0.2151)	(0.8742)	
Competition Policy	**-1.7543**	**-1.5458**	**-1.7542**	**-3.7550**	**1.0340**	**0.2437**	**-1.0255**		**-6.5125***
	(2.3882)	(2.9117)	(2.3882)	(5.7803)	(2.3966)	(1.9914)	(0.6377)		(3.8419)
Business Entry Rate	**-0.0432**	**1.0552****	**-0.0432**	**0.1652**	**1.5868*****		**0.6896*****		**0.0178**
	(0.3758)	(0.4361)	(0.3758)	(0.6230)	(0.3715)		(0.1935)		(0.4160)
Overall Infrastructure Reform	**3.1131**	**-2.8046**	**3.1131**	**10.7567**	**1.5169**		**5.8495*****		**-10.2759*****
	(2.8230)	(3.4495)	(2.8230)	(9.4750)	(2.9694)		(0.6571)		(3.2122)
New Business Registered	**-0.0003****	**-0.0000**	**-0.0003****	**-0.0004**	**-0.0001****		**-0.0003*****		**-0.00002**
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0000)		(0.0000)		(0.0000)
Control of Corruption	**7.9265***	**0.4004**	**7.9265***	**10.1725**	**-0.7747**	**1.2594**	**7.7274*****	**1.7517**	
	(3.7748)	(5.4378)	(3.7748)	(10.7605)	(4.4071)	(2.1661)	(1.3014)	(2.1859)	
Enterprise Restructuring	**-3.9181***	**-5.9681**	**-3.9182***	**-2.6236**	**-9.019****	**-1.5273**	**0.2107**		**14.8256*****
	(1.9875)	(3.7200)	(1.9875)	(3.4010)	(3.1806)	(1.5152)	(0.5856)		(4.2095)
Large-scale Privatisation	**0.7038**	**2.8138**	**0.7038**	**1.0662**	**-0.9383**		**-4.3148*****		**5.7142***
	(4.2427)	(4.6219)	(4.2427)	(7.3328)	(4.6772)		(1.0260)		(3.3037)
Small-scale Privatisation		**15.6856****			**24.9929*****				**-29.7017*****
		(7.5512)			(6.3937)				(9.5591)
Trade Openness Ratio	**17.9122****	**-6.5939**	**17.9122****	**16.6791**	**-6.1864**	**0.1266**	**17.2947*****	**-0.2479**	
	(6.5423)	(5.0821)	(6.5423)	(9.8369)	(4.6725)	(2.2512)	(1.8731)	(2.5909)	
Patent Applications by Residents	**-0.0084***	**0.0012**	**-0.0084***	**-0.0114**	**0.0035*****	**0.0001**	**-0.0055*****	**0.0001**	
	(0.0037)	(0.0012)	(0.0037)	(0.0129)	(0.0011)	(0.0002)	(0.0005)	(0.0001)	
Price Liberalisation		**10.1753**			**4.2859**				**1.3630**
		(11.3106)			(11.8169)				(9.6622)
Political Stability No Violence	**-8.3477**	**5.6202***	**-8.3477**	**-12.4575**	**11.9730*****	**-0.5926**	**-6.2376*****		**-2.9465**
	(4.3355)	(3.4033)	(4.3355)	(13.4924)	(3.0423)	(2.1045)	(1.4452)		(3.1273)
Physical Quality of Life Index	**-0.0837**	**0.0557**	**-0.0837**	**0.2051**	**-0.0470**	**-0.4725****	**-0.2280*****	**-0.1931**	
	(0.2296)	(0.2167)	(0.2296)	(0.6826)	(0.1940)	(0.2256)	(0.0219)	(0.1191)	
Rule of Law	**8.2130**	**-6.0758**	**8.2130**	**8.9733**	**-4.1293**	**0.1788**	**4.1215*****		**8.7036**
	(4.4252)	(6.6683)	(4.4252)	(8.0378)	(5.2526)	(2.2330)	(1.0838)		(6.0278)
Trade and Forex System		**9.5565**			**30.3920*****				**-6.9097**
		(9.5451)			(9.1379)				(6.1564)
Government Effectiveness	**-3.4875**	**-0.8669**	**-3.4875**	**-2.8022**	**-9.2561****	**0.5394**	**-5.8263*****		**-0.9458**
	(2.7420)	(4.9145)	(2.7420)	(3.8118)	(4.2827)	(2.3899)	(0.4444)		(6.6808)
Intercept	**13.3775**	**-132.5245***	**13.3774**	**-24.6451**	**-238.6341*****			**20.9454****	**136.6314****
	(18.3215)	(75.7530)	(18.3215)	(65.8824)	(67.0331)			(9.5116)	(62.9807)

Independent Variable	*OLS (1)*	*RE*	*FE*	*OLS (2)*	*LSDV*	*GMM (1)*	*GMM (2)*		*3SLS*
Estimation period 1989-2007	*GDP per capita growth*								*FDI inflows (%of GDP)*
Country Effects	Yes***	Yes	Yes***	Yes***	-	-	-	-	-
Time Effects	-	-	-	Yes	Yes	Yes	-	-	-
R^2	0.99	0.80	0.93	0.99	0.91			0.52	0.53
Prob>F, chi2	0.0026	0.0000	0.0370	-	0.0012	0.0000	0.0000	0.0000	0.0000

** 10% significance level ** 5% significance level *** 1% significance level*

Independent Variable	*OLS (1)*	*RE*	*FE (1)*	*FE (2)*	*OLS (2)*	*LSDV*
Estimation period 1995-2007			*GDP per capita growth*			
GDP per capita growth $_{(t-1)}$						**0.7221***** (0.2138)
FDI inflows as a proportion of GDP	**0.8965**** (0.3509)	**0.1102** (0.4797)	**0.8965**** (0.3511)	**0.3627**** (0.1713)	**-0.0046** (0.1255)	**0.7825*** (0.4270)
Financial Development	**0.1436** (0.0832)	**0.0100** (0.1438)	**0.1436** (0.0822)	**0.0682** (0.0451)		**0.0386** (0.1136)
FDI * Financial Development	**-0.0218*** (0.0099)	**0.0033** (0.0133)	**-0.0218*** (0.0101)	**-0.0086*** (0.0049)	**-0.0001** (0.0035)	**-0.0134** (0.0116)
EU dummy	**-1.6714** (1.3502)	**2.0734** (1.6657)	**-1.6714** (1.1833)	**1.4931*** (0.7513)	**1.0675** (0.8456)	**2.4481*** (1.3166)
Competition Policy	**-1.7543** (2.7676)	**-1.5458** (2.9117)	**-1.7542** (2.3882)	**0.3744** (1.6733)		**-0.3898** (2.3188)
Business Entry Rate	**-0.0432** (0.4071)	**1.0552**** (0.4361)	**-0.0432** (0.3758)			**1.4992***** (0.3678)
Overall Infrastructure Reform	**3.1131** (2.5237)	**-2.8046** (3.4495)	**3.1131** (2.8230)	**1.5393** (1.4420)		**0.1892** (2.8579)
New Business Registered	**-0.0003*** (0.0001)	**-0.00004** (0.0001)	**-0.0003**** (0.0001)			**-0.0001**** (0.0000)
Control of Corruption	**7.9265*** (4.7747)	**0.4004** (5.4378)	**7.9265*** (3.7748)	**1.5541** (1.7881)		**-0.6430** (4.2941)
Enterprise Restructuring	**-3.9182** (2.1373)	**-5.9681** (3.7200)	**-3.9182*** (1.9875)	**-0.1459** (1.7030)		**-6.0256*** (2.9300)
Large-scale Privatisation	**0.7038** (5.0785)	**2.8138** (4.6217)	**0.7038** (4.2427)			**2.3979** (3.6424)
Small-scale Privatisation		**15.6856**** (7.5512)				**19.7307***** (6.0668)
Trade Openness Ratio	**17.9122**** (6.4206)	**-6.5939** (5.0821)	**17.9122**** (6.5423)	**7.1056***** (2.2958)		**-8.1660*** (4.0297)
Patent Applications by Residents	**-0.0084** (0.0048)	**0.0012** (0.0012)	**-0.0084*** (0.0037)	**0.0001** (0.0004)	**0.0003** (0.0003)	**0.0027**** (0.0010)
Research and Development Expenditure as proportion of GDP				**3.1549** (2.1462)		
Price Liberalisation		**10.1753** (11.3106)		**-3.2880** (3.5195)		**0.1226** (9.3927)
Political Stability No Violence	**-8.3477** (5.5923)	**5.6202*** (3.4033)	**-8.3477** (4.3355)	**4.4286***** (1.2313)		**9.7584***** (2.9473)
Physical Quality of Life Index	**-0.0837** (0.2951)	**0.0557** (0.2167)	**-0.0837** (0.2296)	**-0.2743**** (0.1357)	**-0.2869*** (0.1639)	**0.0609** (0.1707)
Rule of Law	**8.2130** (4.9850)	**-6.0758** (6.6683)	**8.2130** (4.4252)			**-5.6293** (5.2537)
Trade and Forex System		**9.5565**		**-1.2912**		**23.2171****

Independent Variable	*OLS (1)*	*RE*	*FE (1)*	*FE (2)*	*OLS (2)*	*LSDV*
Estimation period 1995-2007			*GDP per capita growth*			
		(9.5451)		(2.7956)		(8.5372)
Government Effectiveness	**-3.4875**	**-0.8669**	**-3.4875**	**-0.1069**		**-6.7384**
	(3.2097)	(4.9145)	(2.7420)	(2.2262)		(4.2433)
Intercept	**15.0489**	**-132.5245***	**15.0489**	**5.9363**	**29.7152****	**-184.1691*****
	(21.8285)	(75.7530)	(18.0027)	(14.1054)	(13.2293)	(61.5934)
Country Effects	Yes***	Yes	Yes***	Yes***	Yes***	-
Time Effects	-	-	-	-	Yes***	-
R^2	0.99	0.80	0.93	0.61	0.75	0.88
Prob>F, chi2	0.0026	0.0000	0.0370	0.0002	0.0000	0.0004

** 10% significance level ** 5% significance level *** 1% significance level*

Independent Variable	*GMM (1)*	*GMM (2)*		*3SLS*	
Estimation period 1995-2007 (continued)	*GDP per capita growth*			*FDI inflows (%of GDP)*	*Financial Development*
GDP per capita growth $_{(t-1)}$	**0.3340*** **	**0.0380**	**0.6589*** **		
	(0.0427)	(0.1574)	(0.1186)		
FDI inflows as a proportion of GDP	**0.2553***	**0.6071*** **	**0.1232**		
	(0.1451)	(0.1957)	(0.1212)		
FDI inflows as a proportion of GDP$_{(t-1)}$	**0.0108**				
	(0.0957)				
Financial Development	**0.1028** **		**-0.0321**	**0.1171**	
	(0.0427)		(0.0369)	(0.1346)	
FDI * Financial Development	**-0.0082***	**-0.0150*** **			
	(0.0048)	(0.0045)			
EU dummy		**0.2398**		**0.8914**	
		(0.6762)		(1.4860)	
Competition Policy		**1.9492***		**-0.0203**	
		(1.0390)		(3.0671)	
Business Entry Rate		**0.0257**			
		(0.4118)			
Overall Infrastructure Reform		**-1.2630**		**-1.8641**	**-4.0359**
		(1.2199)		(3.2320)	(6.0479)
New Business Registered					
Control of Corruption		**9.1796*** **		**9.9281*** **	
		(1.9689)		(3.6318)	
Enterprise Restructuring		**-1.2372***		**0.4867**	
		(0.7243)		(2.2256)	
Large-scale Privatisation					
Small-scale Privatisation					
Trade Openness Ratio		**18.4499*** **		**7.5387** **	
		(2.8589)		(3.2229)	
Patent Applications by Residents		**0.0002**	**0.0001**		
		(0.0018)	(0.0001)		
Research and Development Expenditure as proportion of GDP					
Price Liberalisation				**13.3464***	
				(7.3197)	
Political Stability No Violence		**-2.8737**	**0.3229**		**-8.7715**
		(3.2026)	(1.1174)		(7.2307)
Physical Quality of Life Index		**-0.5205*** **	**0.0109**	**-0.2191**	
		(0.1121)	(0.0799)	(0.2038)	
Rule of Law		**-2.4140**		**-8.2531**	

Independent Variable	*GMM (1)*	*GMM (2)*		*3SLS*	
Estimation period 1995-2007 (continued)		*GDP per capita growth*		*FDI inflows (%of GDP)*	*Financial Development*
		(3.4733)		(7.7421)	
Trade and Forex System				**3.4970**	
				(4.2348)	
Government Effectiveness		**-5.1330*****		**-5.1683**	**6.2442**
		(1.1156)		(6.7256)	(8.1723)
Banking reform and interest rate liberalisation					**17.9807****
					(7.0581)
Cost of business start-up procedures					**-0.3317***
					(0.1747)
Intercept			**1.8561**	**-53.9494****	**-10.5715**
			(5.7764)	(23.5201)	(22.1073)
Country Effects	-	-	-	-	-
Time Effects	-	-	-	-	-
R^2			0.50	0.63	0.29
Prob>F, chi2	0.0000	0.0000	0.0000	0.0000	0.0062

** 10% significance level ** 5% significance level *** 1% significance level*